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ABSTRACT

The Information and Referral Manual (IRMA) project is an ongoing, comprehensive urban services information system that produces and maintains directories of city agency services and functions for New York City. The directories describe services offered, office locations, telephone numbers, hours of operation, eligibility requirements, and procedures for receiving services. This report chronicles the project from its inception through the design and field testing phases. IRMA uses the Data Retrieval System (DRS) for its data base management system, and it has been designed for use by governmental bodies other than New York City. (DGC)

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FINAL REPORT

Project No. 2-02-05

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Authors: Rae Brooks

Danielson J. Eastman

Project IRMA: Development and Demonstration of a computer-assisted Citizen Information Resource System to enable urban residents to make use of available public services.

Grantee: Administration and Management Research Association of New York City, Inc. 250 Broadway New York, New York 10017.

July 1, 1974

U. S. Department of Health, Education and Welfare
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VOLUME I

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TABLE OF CONTENTS

		Page Number
ABSTRACT		1
SUMMARY		1
I.	INTRODUCTION	1-1
	A. BACKGROUND	1-1
	B. PROJECT OBJECTIVES	1-2
	C. SCOPE OF PROJECT	1-3
	D. PRELIMINARY CONCEPTS	1-5
	E. INFORMATION AND REFERRAL PROCESS	1-6
II.	FACT FINDING AND INFORMATION GATHERING	2-1
	A. SURVEY OF RELATED SYSTEMS	2-1
	B. USER SURVEY	2-3
	C. IRMA USAGE SURVEY	2-5
III.	STUDY, ANALYSIS AND FINDINGS	3-1
	A. FINDINGS FROM SURVEY OF OTHER SYSTEMS	3-1
	B. STRUCTURE OF USER NEED FINDINGS	3-2
	C. IRMA USAGE FINDINGS	3-11
	D. DATA ACQUISITION	3-15
	E. FACILITY AND COLLECTION FINDINGS	3-27
IV.	INFORMATION STRUCTURE	4-1
	A. DESIGN OBJECTIVES	4-1
	B. DATA DEFINITION	4-2
	C. SERVICES STRUCTURE	4-6
	D. SERVICES INDEXING	4-10
V.	INFORMATION SYSTEM	5-1
	A. "STANDARD" FEATURES	5-1
	B. LINK MODULES	5-3
	C. SERVICES SELECTION	5-4
	D. FORMATTING	5-5
	E. REPORTS	5-6

APPENDICES (VOLUME II)

Table of Contents

		Page No.
A.	Administrative Order No. 28	A- 1
B.	Survey of Other Systems	B- 1
C.	Use of Referral Information	C- 1
D.	Directory Testing	
	IRMA I	D- 2
	IRMA II Prepublication Test	D- 36
	IRMA II Monitoring Plan	D- 80
	IRMA II Fielding Testing	D-122
E.	Facilities Surveys	
	Collection Materials	E- 2
	Service Coding (IRMA II)	E- 43
	Community Surveys	E- 70
F.	Directory Examples	
	IRMA I	F- 2
	IRMA II	F- 29
	IRMA III	F- 50
G.	System Environment	G- 2
H.	Data Bases	
	Data Elements	H- 2
	Report Samples	H- 16
I.	Bibliography	I- 1

LIST OF CHARTS AND TABLES

Figure		Page
1-1	FUNCTIONS OF INFORMATION AND REFERRAL	1-7
1-2	REPRESENTATIVE - OPERATIONAL AND PROPOSED - I & R SYSTEMS	1-8
1-3	INFORMATION AND REFERRAL PROCESS	1-12
1-4	FEEDBACK PROCESS	1-14
2-1	SAMPLES OF NEW YORK CITY DIRECTORIES	2-6
3-1	INFORMATION USERS	3-4
3-2	COLLECTION PROCESS	3-20
3-3	VERIFICATION PROCESS	3-23
3-4	ORIGINAL IRMA II SOURCE FILES	3-32
4-1	SERVICE TERMS	4-9

ABSTRACT

IRMA (Information and Referral Manual) is an on-going, comprehensive urban services information system whose purpose is to aid those organizations and individuals who help New Yorkers cope with their social and bureaucratic problems.

This report presents the results of IRMA's studies in the information science and related fields and documents the findings methodology and procedures used to develop and demonstrate the computerized IRMA.

SUMMARY

IRMA's major contributions have been made in five areas: computer-assisted publication, the use of the computer for data base development, services terminology, user analysis and replicability.

Directory Production

IRMA's goal has always been to serve as many people in New York with as much information in the social services field as they needed. Therefore the major thrust of the grant period was to generate directories--different kinds to suit different situations. It was not considered enough that the computer could store data, manipulate it and produce standard reports. It must also have the capability of producing the desired information in directory format. This meant that such information could be made available to people outside of IRMA and not merely kept in a computer data bank accessible only to the people who managed it. Since on-line terminals seem presently beyond the financial means or practical need of a majority of agencies that use information, printed directories are essential to meeting that goal. The use of terminals, given the appropriate settings is by no means precluded, but the production of directories comes closer to meeting current and future demand more swiftly and practically.

IRMA's products over the past two years have demonstrated that it can be done. IRMA has produced citywide, borough wide, and certain special purpose local directories. IRMA has produced directories arranged alphabetically, by facility, by service subject, by zip code, and by target group. It can also produce any number of others: directory by area served, administering agency, facility type (government or voluntary), and so on.

Each directory has been accompanied by one or more of three indexes which are generated and page referenced automatically. These indexes are:

1. Facilities and/or agencies.
2. Key or clue words directly referenced to the services of a facility.
3. Key words out of context: that is, any relevant term within a service description phrase appears separately and next to the context in which it appears.

Publication of the directories has been varied in media -- microfiche, computer print-out copy, print-out reduced (to 8-1/2 by 11), and offset. As a last refinement, the computer package contains controls for various type fonts and sizes, for bold face, for italics, and other print changes, so that conventional printing can also be foreseen.

Computer Processing

Another result of IRMA's growth is the ability to build data bases and to process, store, update and ask questions about information stored within them. For example, editing is aided by computer. If the makeup of a local directory requires subject classification, the file can be queried as to how many, if any, facilities are listed under a certain subject, and the output chapters arranged accordingly. If a list of index words needs selection and reduction, the list can be generated, the editing done, and the new adjusted list printed immediately. When checking is done, different kinds of reports are requested of the base. For checking the computer file against the original folder material recently updated by telephone, for example, a report of the facilities verified is requested in the order of the numerical identity, an order that matches that of the folders. In short, reports can be produced for any purpose, of any length, in any combination.

IRMA has succeeded in transferring all its systems capabilities to an in-house terminal which has aided in data editing, file management and computer programing.

Controlled Vocabulary

IRMA also considered it necessary to develop a technique for computer codifying the language of human services. After first defining facilities and services as separate entities, procedures were developed to identify and define some of the words in the services universe, and to create a structured thesaurus out of them. The IRMA thesaurus bridges the gap between the terms people use and the way information is delivered to them via computer.

Specifically, by assigning to certain terms their roles in the lexicon and using them in combination, a very definite standardized description of a service is arrived at. More importantly, the same term can be applied in similar cases. This aids the user in his search

at the same time it aids the coder in defining a service. Thus certain terms denote the subject of service; certain ones, the way a service is offered; others the person for who the service is intended.

User Analysis

The primary consideration in all of IRMA's deliberations and development has always been the user. Prior to starting its survey, IRMA (and most others) held a rather generalized concept of who that user was. The findings were rather startling as to the differences among users and an approach was made toward documenting and analyzing user characteristics and the implications for directory creation. The results are far from complete, but it is an important area to pursue, so that IRMA's existing and potential products will conform even more closely with the needs of each individual user.

Replicability

IRMA's strength lies in having developed and demonstrated transferable procedures, processes and systems for the implementation of a generally useful central resource file. All have been thoroughly documented so that they may be used by others, in whole or in part. As IRMA discovers the necessity through user request or other means, of extending the existing data base, new and different information can be added. Almost any other data base can be absorbed or referenced. For those in totally different settings, urban or rural, indexing and classification schemes can be adapted, methods of user analysis can be extended -- and for both, proven computer software is available.

And finally, the fact that the basic information on urban services in New York City has been collected and is available cannot be overlooked, and should not be overshadowed by systems accomplishments.

In each area, IRMA has achieved more than expected, and less than it hoped to. The body of this report documents how each of these results were arrived at.

I. INTRODUCTION

A. BACKGROUND

Administration

Project IRMA was initiated in 1966 by Mayor Lindsay with administration provided by the Little City Hall program. Subsequently the resource file was revised and updated under the auspices of the Municipal Reference and Research Center of the Municipal Services Administration. In 1970, IRMA was assigned to the Office of Neighborhood Government where the manual directory was field-tested in both government and voluntary agency settings.

In 1972, the Mayor transferred Project IRMA to the Office of Administration where IRMA was mandated by administrative order of Deputy Mayor Costello "to maintain a current directory of all City agency services and functions, including nature of services offered, office locations, telephone numbers, hours of operation, eligibility requirements and procedures for receiving the services available."[1]

At this point the grant under discussion was sought and received in conjunction with the Center for the Advancement of Library Science of the Graduate Division of the City University of New York (CUNY). The grant was awarded to the Administration and Management Research Association of New York City, Inc., a non-profit research corporation in the Mayor's office. PROBER, a developmental information service operating out of the Human Resources Administration, was absorbed by IRMA along with its staff at this point. CUNY initially was to provide technical consultation and computer resources. Three months into the project, CUNY withdrew, and AMRA obtained the services of the Massachusetts Institute of Technology Electronic Systems Laboratory and the computer resources of the New York City Department of City Planning, Management and Information Systems Department. ARAP of Princeton, New Jersey provided the software package and the computer facility used during the first year, as well as their services as technical consultants. While the original funding period was to have been for eight months, it was extended (at no additional cost) to over two years. During that time, IRMA's staff has fluctuated from three to 21 and back to five; major resources have been provided by three city agencies.

Development

Prior to the grant period, two years of collection and compilation effort resulted in an extensive manually produced inventory of urban services--a set of directories published on rolodex cards. They were tested in a limited number of field sites over an over-lapping two year period. The rolodex edition (IRMA I), contained full descriptions on a major cross-section of available facilities organized by

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1. Appendix A: Administrative Order No. 28

subject headings; it included non-facility information and a key word index. The material and the classification system formed the basis of the computerized editions (IRMA II & III). IRMA II was also a city-wide compendium of facilities offering public services -- this time displayed on micro-fiche. This demonstration edition was tested in a more limited group of field sites over a period of three months. It contained double the entries of IRMA I, and twice as many sets were produced. The range of information was narrower and facilities were also organized by service category within which they were ordered geographically. The computer produced micro-fiche sets were accompanied by a manually produced related terms index and a computer generated index of facilities. The design elements developed in this stage were used in the production of a model neighborhood directory (IRMA III).

The last stage entailed essentially the publication of a series of directories, together with appropriate indexes, covering Brooklyn.[1] As stipulated in the revised grant conditions, IRMA produced 19 separate directories (in addition to the city-wide edition): one for the borough, and one for each of its 18 Community Planning Districts. The directory for Crown Heights contained extended and particularized service information on those facilities located in that particular neighborhood and each test version (of which there were five) was accompanied by one or more automatically generated indexes.

These indexes were: key word out of context (KWOC), an index of service terms (key word alone), and an alphabetically arranged facility index. It is this series of formats we call IRMA III.[2]

B. PROJECT OBJECTIVES

The IRMA system seeks to increase the effectiveness of the social services network by improving inter-agency communication, decreasing agency overhead and by releasing key staff to aid the client more directly. As a long range goal, IRMA seeks to improve the delivery system itself. The citizen, of course, is the ultimate beneficiary. This goal is to be accomplished by meeting the growing demand from both individuals and agencies for comprehensive, current and accurate information about the multitude of available urban services and resources -- thus reducing the difficulty involved in reaching those resources and contributing to an understanding of the services network on the part of both the citizen and those agencies that make up the network.

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1. Brooklyn was chosen so that IRMA could interface with AMRA's Citizen Urban Information Centers (CUIC) program which planned Information and Referral in all 55 branches of the Brooklyn Public libraries.

2. Appendix F: Directory Examples

In the case of the citizen, IRMA seeks to aid him in negotiating the bureaucratic maze and allow him to take advantage of service alternatives open to him. As a further goal, IRMA seeks to help him help himself. IRMA hopes in this way to contribute to his ability finally to become more independent of that network. In the case of agencies, IRMA's goal specifically is to facilitate the flow of services by eliminating the disproportionate amount of time and money spent in the attempt to compile usable information on behalf of the clients they serve. As agency services become more specialized, as new ones are added and old ones disappear, inter-agency client referral assumes a greater importance as an integral service component. However, without a readily available basic resource file, agencies are forced to compile this vital and changing information themselves, to depend on a variety of directories of vastly uneven quality and relevance -- or to do without. The result in any case is wasted time and the diffusion of already scarce resources. When the agency does elect to compile information, the consequence is usually the proliferation of incomplete, incorrect, unretrievable or outdated information. More significantly, it leads to duplication of effort. IRMA's library contains many overlapping and duplicative directories, in some cases compiled by the same agency.

IRMA's goal, then, is to develop an on-going information system to resolve this problem. It is IRMA's contention that a central information system capable of producing a variety of computer-assisted directories to suit the needs of a variety of social agencies is a far more economical and efficient solution to the problem than the methods presently being used.

The sheer magnitude of the data, coupled with the need for currency, flexibility and above all simplicity and ease of use necessitates a complex and sophisticated system. But, as this report will document, IRMA has gone a long way toward meeting that goal.

C. SCOPE OF PROJECT

The focus of the grant project was on the function and structure of a viable information and retrieval process, and on the systems procedures and information flow necessary to support this process. The organization and staffing to execute those functions was not considered within the scope of the grant project. As a direct consequence, IRMA would not publish all possible user, agency, subject and neighborhood directories--it was sufficient to demonstrate those capabilities. Concomitantly, no mass distribution system was initiated. Despite the demand, dissemination was largely limited to test sites. Emphasis was placed on the experimental nature of the project, with priority given to testing various approaches and demonstrating their feasibility and effects. This materially affected the time span between initiation and acceptable product.

The IRMA I data base already contained material on facilities throughout the city. This data was maintained to insure a thorough application of the classification and indexing system, utilize the information already acquired and provide a suitable base for systems design.

Similarly all the classes of services from IRMA I were modified and incorporated into the computer-assisted base, which insured an equable distribution of facilities throughout those classes for testing purposes.

The focal point of entry was standardized on the facility. This was in consonance with IRMA's aim to establish itself as a facility and services oriented entity. Later as related information is added and computer linkages tested, alternative formats will be tested, but they were not considered within the scope of the project.

In one area the scope of the project exceeded the original plan. That was in the number of facilities included in the data base. IRMA II produced information on twice as many facilities as originally proposed. This necessitated a change in publication plans from the hard-bound looseleaf offset directories originally specified, to the far more economical micro-fiche (for the city-wide edition).

In another area the scope of the project was necessarily narrowed. The proposal promised extended service information on all facilities listed. This proved impossible. A conscientious job of collection and verification of such information as eligibility, application procedures, fees, etc. on 6,000 facilities was beyond the capacity of IRMA's resources. Instead, IRMA concentrated on designing a strong and flexible system with the potential of handling a great deal of material, classifying and verifying all the information in the data base, and producing certain demonstration products for testing purposes.

While the computer systems design and application did not turn out to be nearly as simple as projected, the end result leaves IRMA at the grant period's conclusion with a far more highly-developed, sophisticated and useful package then was contemplated originally. The decision to concentrate on systems development throughout this period has been eminently justified.

The final product developed under the terms of the grant (the directory for Community Planning District 8 in Brooklyn) bears witness to that fact. With the publication of this model the capability of the IRMA system has been conclusively demonstrated.

D. PRELIMINARY CONCEPTS

In keeping with the over-all objectives as previously outlined, IRMA formulated some broad concepts on which to base its development. Analysis of the data gathering problems and retrieval processes was based on these preliminary concepts.

1. Urban services cover such a broad field that it is of paramount importance that IRMA define its limits. Through a combination of elements: an analysis of the types of information available, an investigation into user need, the establishment of criteria, a consideration of the practicalities involved and others -- IRMA could arrive at a functional definition of those limits.

2. IRMA's primary criterion for the inclusion of information is that it be useful and applicable for referral purposes. Agencies are tabulated and described from many points of view: financial status, staffing patterns, number of clients served, etc. IRMA, however, concentrates on presenting a referral picture of the facility: its location, nature and conditions of service as well as other information of direct interest to the potential client and to those referring potential clients. It is primarily a problem solving device -- not a reference work. Basically, IRMA conforms to the old journalistic credo: who, what, when, where, and how.

3. IRMA is not a referral center and eschews all its special client-directed functions. As the supplier of information, IRMA's job is to identify, define, codify, maintain, process, validate, and manipulate information. Its user target is the social agency information specialist: that person who links or improves the link between client and service. IRMA attempts to redefine Information and Referral as separate functional terms, and not terms forever linked -- like law and order.

4. IRMA will be available on the widest possible basis, providing service to any organization that demonstrates it can make effective use of this powerful tool.

5. IRMA deals with a high volume of material of a volatile nature. Both the nature of the data and the necessity for storage, update, alternative methods of retrieval and innate linkages between the information components require computerization. Computerization was the logical next step, given the compilation, production and testing of IRMA I.

6. The key to effective usage of IRMA is the access to it. This access is made up of a number of elements: valid vocabulary and the construction of a thesaurus based on that vocabulary; the interpretation and labeling of services via classification; and alternative strategies for access, including multiple indexing and cross-referencing. Many of the problems inherent

in designing such access points were unique to the social services field, and cannot be fully solved by methods applied to more typical bibliographic inventories.

7. Users require a great variety of products and formats. Information and Referral practitioners tend to under-utilize sources that contain a high percentage of services not relevant to their situation, and tend to reject material published in a form unsuitable to them. User need depends on a large set of variables -- volume and kind of facility information, the nature of the user and his client, the user's physical circumstances, etc. IRMA must be able to identify these differences and supply different kinds of products to match those variables. Computerization makes that possible. Alternative forms of publication can also be predicated on a variety of practical needs.

8. IRMA places highest priority on the quality and accuracy of its information. Without that priority any information system, no matter how sophisticated, will be worse than useless.

E. INFORMATION AND REFERRAL PROCESS

In order to place the development of IRMA as an information service in the larger context of Information and Referral (I & R), some examination of the referral function is in order.

I & R services are defined by recent HEW Regulations[1] as the "providing of information about and referral to appropriate community resources to any family or individual, without regard to eligibility for assistance or other services, who requests help and whose needs can be properly met in this manner."

I & R is practiced in a wide variety of settings. Some agencies, though not many in New York, devote themselves entirely to the practice of I & R, directing their clients to the services they need. The majority in New York City are service agencies offering I & R as an auxillary function, secondary to the primary service of the agency. Community agencies whose function is to improve the quality of neighborhood life and aid in individual problem solving are still another I & R. setting.

Whatever the setting, the activities covered by the term Information and Referral also vary. The following chart (Figure 1-1, Figure 1-2) is the result of a brief inspection of some 10 operational and projected centers. Allowing some latitude in the words used to describe what is roughly the same activity (IRMA arbitrarily chose "resource file development" over "compile resources," for example) it appears that there

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1. 221.9(b)(20) 10/31/73 Postponed to 1/1/75

FIGURE 1-1

FUNCTIONS OF I & R: 10 REPRESENTATIVE SYSTEMS (projected and operational);

FUNCTION	SYSTEM[1]										TOTAL[2]
	1	2	3	4	5	6	7	8	9	10	
Resource file development and maintenance		X	X	X	X	X	X	X	X	X	9
Referral			X	X	X	X	X	X	X	X	8
Follow-up	X	X				X		X	X	X	6
Information giving			X	X		X		X	X	X	6
Outreach		X		X				X	X	X	5
Client tracking		X	X					X	X	X	5
Counseling	X					X		X	X		4
Public information Publicity			X			X		X		X	4
Advocacy	X		X						X		3
Evaluation	X				X				X		3
Planning, service scheduling		X				X		X			3
Identify information needs							X		X		2
Transportation	X	X									2
Intake		X							X		2
Reporting		X							X		2
Identify gaps in community services			X			X					2
Problem identification	X										1
Volunteer recruitment	X										1
Feedback				X							1
On the spot assistance									X		1

1. Numbers refer to sources on Figure 1-2.
2. Number of systems with specified function.

FIGURE 1-2

10 REPRESENTATIVE SYSTEMS (projected and operational)

1. Blanchard, Carolyn, Family Counselling Service- Model Cities Information Referral and Assistance Center, Perth Amboy, New Jersey, 1972.

2. Bomen, James, Chattanooga-Hamilton County Community Action Agency- Human Services Information System, Chattanooga, Tennessee, 1972.

3. Health and Welfare Council of Central Maryland, Inc., Description of Operation of the Information and Referral Service, Baltimore, Maryland, 1971.

4. Hirsch, Ralph B., Community Information System: A Proposal to Begin Harnessing Modern Information Technology to the Delivery of Social Services, Philadelphia Model Cities Program/Physical Environment Task Force, Philadelphia, Pa., 1968.

5. Information and Referral Service of Los Angeles County, Inc., INFO'S Resource Data System, Los Angeles, California, 1971.

6. Long, Nicholas, et. al., Information and Referral Centers: A Functional Analysis, Institute for Interdisciplinary Studies, Minneapolis, Minnesota, 1971.

7. Neighborhood Information Centers Project, A Project to Establish and Implement Two Neighborhood Information Centers in the Borough of Queens, New York City, U. S. Department of Health, Education and Welfare, Office of Education, Bureau of Libraries and Learning Resources, Washington, D.C., 1973.

8. The Mitre Corporation, Testing the Applicability of Existing Telecommunication Technology in the Administration and Delivery of Social Services, The Mitre Corporation, Washington, D.C., 1973.

9. Human Resources Administration, New York, N.Y. (unpublished plan), 1971.

10. Department of Social Services, New York, N.Y. (unpublished plan), 1973.

is a preponderance of agreement on what the functions are. Resource file development, referral, follow-up, information giving, outreach, and client-tracking head the list.

In his description of the Wisconsin I & R network,[1] Dr. Nicholas Long describes all functions but client-tracking (although many functions he describes under follow-through are included in client-tracking systems).

"Resource file.

> The resource file is an organized, cross-indexed file of all services and programs available in the area served by the Information and Referral center.

Referral.

> Although referral may be thought of as including such activities as "directing" or "steering" inquirers to appropriate agencies, the definition used in this program limits the term to the activity of making an appointment with a worker in another agency for persons to contact the Information and Referral center. Obviously, not all inquirers will need this kind of referral.

Follow-through.

> Our definition limits "complete follow-through" to those calls for which a referral was made. Follow-through requires contacting both the inquirer and the agency to which he or she was referred to determine whether in inquirer reached the agency, whether the referral was appropriate, and whether inquirer received the service requested.

Information giving.

> Information giving consists primarily of providing information about services and programs. It includes some effort to obtain background eligibility for a specific agency, but this is only a screening procedure; the actual determination of eligibility is left to the service facility.

Outreach.

> Outreach is a case-finding activity in which the Information and Referral center reaches out into the community to stimulate the use of existing programs and services by those who are not currently using them."

The United Way of America has also described I & R functions and developed a set of recommended national standards for its practice.[2]

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1. Long, Nicholas, Information and Referral Services: Evaluation, Interdisciplinary Studies, Minneapolis, Minnesota, 1974.

2. United Way of America, National Standards for Information and Referral Services, Alexandria, Virginia, 1973.

"The main functions of an Information and Referral service are:

a. Linking people in need with the appropriate agency or services designed to eliminate or alleviate that need.

b. Assisting the long-range community planning processes by discovering gaps, overlaps, and duplication in services...."

"Resource information is the base upon which an Information and Referral service rests and from which it derives its body of knowledge of community agencies and services. The adequate provision of service reflects how skillfully and effectively this knowledge is imparted to those in need.

"Finally, the data collection on itself and its clients permits the I & R service to evaluate how adequately it has serviced its clients and assists the community in systematically planning for the future of its social services delivery system."

Among other standards they recommend are the following:

"The standard for adequate provision of services to the client shall consist of these criteria:

a. Interviewing of client and assessment of problem and services needed.

b. Information giving, pertinent to the problem, but involving no active participation by staff.

c. Referral, or active participation by staff, when assessment of problem indicates further assistance is necessary to effect linkage of clients to needed services.

d. Follow-up in all referral cases.

e. Data collection on clients and services rendered to them as well as data on the Information and Referral service itself."

"The standard for resource information shall consist of these criteria:

a. Survey of all existing bona fide agencies and services available to the client in the area of service.

b. File consisting of legal names, cross referenced to related service or problem category file.

c. Geographical area file of services."

Almost all of the referral centers surveyed assumed that the I & R service will build its own resource file. IRMA sees the interactive process as originating with a central information resource file which

radiates to and interacts with referring agencies, whether or not their sole service consists of providing I & R. These agencies are thus relieved of the necessity of maintaining a services data base. Moreover, the central information file would not be as limited as the file described above, and can be maintained more economically and efficiently through the use of computerization.

Urban Services Information Network

IRMA defines the total I & R process as a closed-loop manipulation of certain data relating to services and facilities available to the general public or to a subset thereof. In its simplest form, it looks like this:

Data: raw data regarding services. This data is collected from facilities, agencies, specialized and local resources. The relevant referral information is processed and converted into

Information: the processed data as it is extracted, displayed and disseminated to the IRMA users which results in

Assistance:[1] the interaction (based on the information) between the public and the IRMA user which generates

Action: the correct connection between the client and the services (bureaucratic or social) network which results in

Feedback: communication within the network that is facilitated by the flow of proper referral information or serves to directly improve that flow.

In reality it is a far more complex situation, as exemplified by the schematic description of the probable linkages among various information elements in this city, as on the following chart (Figure 1-3). The basic elements involved in such a system are by their nature inter-related, although they can (and often do) stand quite alone. These components are: the information resource base file, the information disseminating mechanism, and the feedback mechanism.

These distinctions are not, of course, always clearly defined. The utility of the information base file depends upon its ability to maintain the integrity of the data, and this involves a certain level of feedback activity. Information dissemination implies the availability of information to disseminate, some of which may be specially developed. Complaint handling often involves both information providing and data base development.

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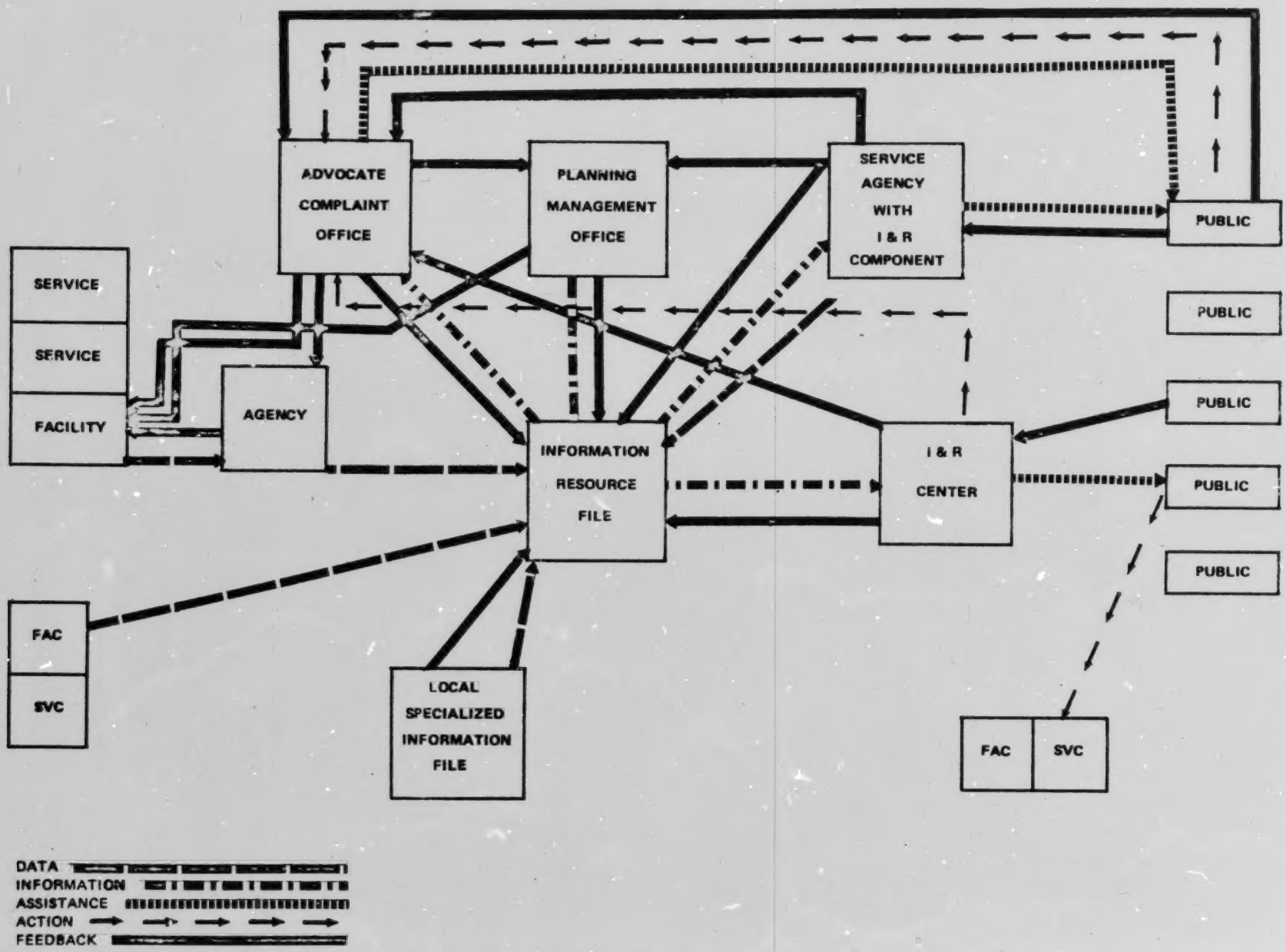
1. Appendix C: Use of Referral Information

FIGURE 1–3

INFORMATION AND REFERRAL PROCESS



Use of Services

Many view as one effect of this interaction the increased consumer use of public service. Indeed, the present maldistribution of use (some services are under-utilized; others are over-burdened) in a large measure results from the inability of people to obtain accurate information that can offer them a choice. If increased information does in fact strain the ability of a facility to provide service, then a reordering of the service structure is indicated -- a function of the planning or management component of the interactive network.

The mechanism for effecting change in service patterns as a result of a better information flow is a dynamic system of feedback from the public, the use of that feedback to alter the information file and disseminate that altered information to the public, while at the same time the management component is using the feedback to evaluate service quality and spread. The feedback mechanism illustrated in the chart (Figure 1-4), has the greatest potential for significant impact upon delivery of services in the city. New York is still in the position of funneling services (and information) to the public with very little ability to evaluate the quality of those services. We know only generally what the public wants, and what it sees as the proper response to those needs. An effective feedback mechanism is essential to carry back to the information providers -- and ultimately to the service providers -- reliable data on the ability of systems to deliver satisfactory response to public needs.

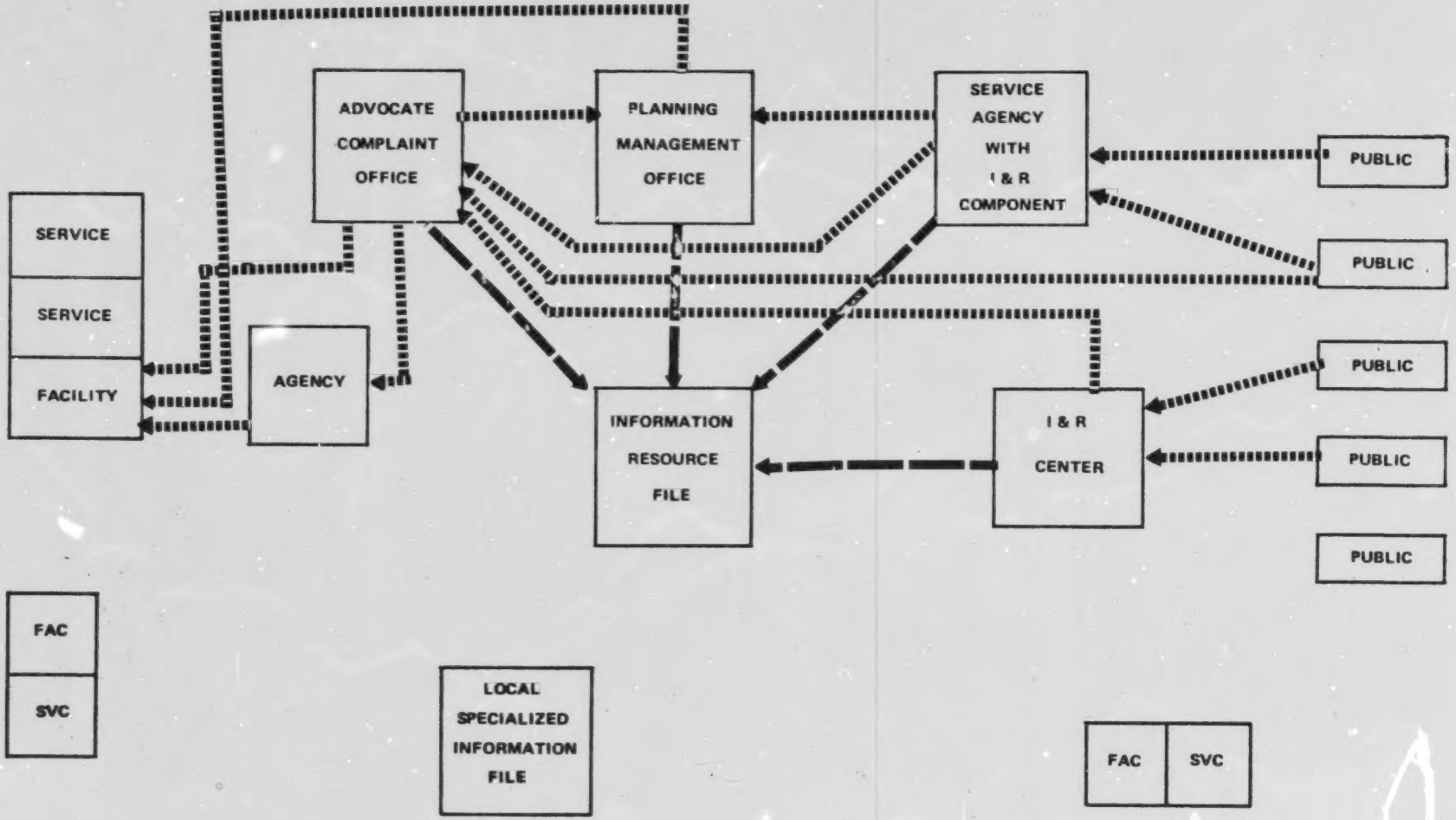
The public benefits from the aid given it in locating needed services. Even the most sophisticated city-dweller finds himself baffled by the complexity of urban life. The less sophisticated, those who do not have the time to track down endless leads and make numberless calls, those who cannot understand the hand-off from one office to another, tend to simply assume that help is not available, that no one cares about them or their problems.

Basic Resource File

A comprehensive citizen information system is based on an initial premise--that of the existence of a unified information resource base file. It has often been the case that citizen information systems were designed and implemented with only tangential concern for the availability of a suitable base of information. The common assumption has been that the information on public services and facilities is around, but that it simply has not been made available to the public through a local source. Therefore, the role of the information disseminating agency, whether it be an I & R center or service agency with an I & R component, with regard to the acquisition of a suitable data base, is often viewed as nothing more than accumulating the existing directories, lists and catalogues and acquainting their counsellors with their use. In most cases, and certainly in the case of New York City, this assumption is patently without foundation.

FIGURE 1–4

FEEDBACK PROCESS



The problem is simple: most services have not heretofor been catalogued in any coherent and consistent manner, and those that are cover only fractions of the many fields and vary with regard to completeness, format, and currentness. There are indeed scores of directories and compendia of services and facilities, prepared by operating agencies on the city, state and federal levels, and by private voluntary and proprietary organizations. IRMA has collected some 250 published within the last two years in the natural course of its data collection operation. But in order to make use of this material, the information counsellor must himself have many of the skills of a professional librarian, or have the material synthesized into a uniform and accessible form. Unfortunately, even such a synthesis would not deal with the secondary (or often tertiary) nature of the information, and the unevenness in content and reliability.

It is therefore basic to the development of an effective citizen information resource system that there be developed a comprehensive, uniform and usable information base file, tailored to the needs of the information disseminating agencies and the ultimate consumer of the information resources.

Project IRMA has such a file. IRMA has been collecting data on all services and facilities provided the public through city, state, federal and voluntary organizations and has organized that data in such a form as to make it maximally usable to information disseminating organizations. The critical element in the success of the IRMA project is not the technology involved in processing the data (although that is not insignificant) but rather the quality of the information that is fed into the system.

One reason for that quality is IRMA's concept of the affirmative verification of all data. This is important, for it is in the integrity and currentness of the information that most base files become defective. There are two axioms of bureaucratic organizations that come into play here: one, agencies and their services change with great frequency and even greater unpredictability and two, reports of such changes are made long after the fact, if at all. Agencies whether government or voluntary, tend quite properly, to look upon the delivery of their services as their prime obligation, and informing others of changes therein as a relatively minor function.

Dissemination Points

People seek information and assistance in a variety of ways for a variety of reasons. In some communities, people make great use of the telephone to get information and assistance; in other areas personal contact is preferred. Some types of problems are best directed towards specialized agencies, while others can be resolved in generalized information centers.

Each of these mechanisms serve a valuable purpose and there exists in New York a wide network of referral points from I & R centers to government, police, church, educational and other service facilities. Though the communities of New York are far from saturated with agencies and offices capable of providing the public with reliable information and assistance on public services and facilities, still the citizen has a variety of options for getting assistance, whether it be at the local library, social service center, community action office, or by phone to a central office. The crucial element is that these information disseminating agencies have two basic qualities, a reliable, complete and usable information resource; and adequate personnel with sufficient training to translate that information into assistance.

In all these areas, it is important that the disseminating agencies relate back to the information resources provider so that the information file meets the needs of the disseminators, and is in such a form that their personnel can make effective use of it.

II. FACT FINDING AND INFORMATION GATHERING

Basic surveys were made relating to IRMA's development in various areas. The first was an investigation of other information systems; including an analysis of their functions, purposes, and designs.

The second was an extended study of the user and his needs bearing on such aspects as the settings in which the user operated, the characteristics of the user, the ways information is used, and on the user's relation to the various IRMA directories.

Finally, IRMA surveyed the facilities intended for inclusion in the resources base: what were they, how many were there, where were they and how was the pertinent information to be captured.

Section II describes these studies and will be followed in Section III by an analysis of the findings in each case.

A. SURVEY OF RELATED SYSTEMS[1]

Surveys included examinations of comparable activities in other communities and a review of the relevant literature in the fields of information science, data processing technology and urban citizen information programs.

The systems surveyed varied widely from one to another in objective, operation, degree of implementation, etc. Many were visited, literature was received on others, and staff were interviewed either in person or by telephone in all cases.

Systems examined outside of New York included:

1. Search; Los Angeles County Inventory of Health Services: a subscription based terminal hook-up linked to a central data base.
2. Chattanooga-Hamilton County Community Action Agency: a computerized client and agency matching and tracking system.
3. Wisconsin Information System: a state wide network using a manual adaptation of The Search Inventory method.
4. Philadelphia Model Cities Information Center: a centralized telephone service using a computerized data base.[2]

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1. Appendix B: Survey of Other Systems
2. This system has been developed into the proposed NEXUS post-coordinated vocabulary system.

5. Indianapolis Services Identification System (ISIS): using a modified version of the UWASIS[1] services identification system.

6. Human Information Systems of Lancaster County Pennsylvania: a computerized effort to coordinate services and provide for long range planning.

7. Easter Seal of Seattle: a subscription based terminal hook-up to a central data base.

8. Citizens Advice Bureau (CAB): A network of I & R centers in England subscribing to a centrally produced directory--two local sites.

Computerized New York City systems surveyed were three with widely divergent functions:

9. Neighborhood Social Service Information System (NSSIS) an experimental model (adapted from the Chattanooga System for client-tracking) in Crown Heights, Brooklyn.

10. Child Welfare Information System (CWIS): a tool to track and match child welfare services and their clients.

11. The Guidance Information System: an experimental student guidance program involving terminal hook-ups presently being studied for vocational and educational focus by City University of New York.

Non-computerized New York systems included were:

1. Mayor's Action Center: a telephone and walk-in complaint handling center.

2. Neighborhood Information Centers (NIC): a demonstration project for I & R in two branch libraries.

3. Call For Action: a complaint center utilizing volunteers and publicized by radio station WMCA (they also publish a directory).

4. Citizens Advice Bureau: a model for replicating the English CAB system.

5. Community Council: telephone referral service (they also publish a directory).

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1. United Way of America, op. cit., "The United Way of America Services Identification System (UWASIS) describes programs within the framework of fundamental goals in the field of human services."

B. USER SURVEY

Never to be lost sight of is the citizen in need of service. A major barrier between the citizen and needed services has been described as a lack of knowledge about the availability of those services and the means of reaching them. It is at this point someone, most often the information provider in a service agency, provides an interface with the recipient. It is this person who must be in possession of all relevant information concerning the availability of services (or lack of them) and should create or improve the link between the service needed and the recipient. It is this person IRMA defines as the user.

General Need

Four particular sources substantiating the need for social services information will be cited here, though there are others. The first quotation is from a report (published in 1966) on neighborhood information centers by Alfred Kahn of Columbia.[1] "Our over-all finding is that most New Yorkers in most sections of the city do not have access to a comprehensive service of the kind needed in the modern city.....in the information-advice-referral field....."

In 1971 the Temporary State Commission to Revise the State Social Services conducted a series of community studies.[2] That report revealed that "Many communities do not have information centers or directories providing information on service programs in operation, types of services available...etc." Further: "Currently the City of New York does not have an information center with the capability of guiding persons in need of services quickly and directly to appropriate public or voluntary agencies. There is urgent need for such an information center."

The Social Security Administration (SSA) in March of 1971 conducted a pilot study on Information and Referral services in SSA District offices.[3] "Knowledge of and referral to community resources are considered essential aspects of the Administrations service to the public. The people who come to our offices often bring with them problems and questions which are outside our program and competence....we should know about community resources...and operate a helpful referral service."

The US Commissioner on Aging, Arthur Fleming, made his position clear at a keynote speech delivered at a recent national meeting of The Alliance of Information and Referral System (AIRS). He said

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1. Kahn, Alfred J., Neighborhood Information Centers; A Study and Some Proposals, Columbia School of Social Work, New York, N.Y., 1966.
2. New York State Temporary Commission to Revise the Social Services Law, New York City and the Social Services: Selected Bronx Communities, New York, N.Y., 1973.
3. United States Department of Health, Education and Welfare, Information and Referral Services in Social Security Administration District Offices, Washington, D.C.

that he considers Information and Referral an important function which could be funded, on a local level by funds from his office.[1]

Information Dissemination Points

The Social Security Administration, while fully cognizant of the desirability of dispensing referral information, no longer has the option not to -- the Federal Government has mandated them to do so. State governments are moving in the same direction.[2] These two offices represent examples of direct service operations with an I & R Service component.

Other centers devote themselves exclusively to I & R, like the Mayor's Action Center in the government field, or the student Information and Referral Center at Lehman College to choose a far different example.

Still others consider I & R a vital function of a community based center which also performs other services. In the voluntary field examples of such agencies are the Catholic Charities Neighborhood Centers and the many senior citizen centers throughout the city.

Banks, local legislative offices, health and school counselors, among others, are beginning to perceive Information and Referral as a necessary adjunct to their services -- though they have yet to set up mechanisms to handle the demand.

Advocacy programs such as the one developed in the consumer field by WNET TV, Channel 13 and complaint centers such as the one run by the Environmental Protection Administration are another kind of dissemination point. Hotlines of various kinds and police neighborhood precinct reception programs represent still others.

These constitute only a portion of the information dissemination or public assistance points in New York. In IRMA's files are requests for IRMA numbering some 1500, and a cursory market survey turned up some 2,000 more potential users.

Survey of Directories

To provide the information resources necessary to sustain such a variety of referral programs, a battery of directories has been published in the last few years. This fact alone attests to the widespread need for social services information.

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1. That office, for example, funds the Wisconsin Information System.
2. The New York State Family Services Law, just vetoed by the Governor, included the proviso that Service Centers supply I & R. The law will probably be resurrected in a different form and will certainly still include that proviso. The State Department of Social Services (DSS) has also made I & R a required service (DSS 74 Adm-82).

These directories were surveyed for insight into the user need they were presumably issued in response to. Most fit, as shown in the accompanying chart (Figure 2-1) within the following categories:

1. Subject -- generally covering a specific service, such as Health or Day Care -- or services for a particular target group such as handicapped or drug addicted. In many cases the two were combined -- Health Services for the drug addicted.
2. Geographic -- a community, a special district (health district, precinct, etc.), or a borough. City-wide services are not considered as geographic.
3. Agency -- Public and voluntary. These directories, more so than the two categories above, tend to be program oriented: a description of a formal program followed by a name/address list.
4. Planning guides -- generally explaining the structures and workings of a bureaucracy. Some contain a good deal of services/facilities data, others contain none.
5. How-to directories: How to deal with a specific problem: arrest, landlord, equal rights, etc. These also vary greatly in facilities/services data.

C. IRMA USAGE SURVEY

Three surveys of IRMA usage were conducted:

1. Two surveys of IRMA I users
2. A controlled in-house test on a preliminary version of IRMA II
3. On-site testing of IRMA II

Production but not testing of IRMA III was completed by the end of the grant period.

Preliminary IRMA I Usage Survey

IRMA I had been in use approximately two and a half years. The sites included:[1]

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1. Appendix D: Directory Testing; IRMA I, Location of Test Sites

FIGURE 2-1

SAMPLES OF NEW YORK CITY DIRECTORIES

Subject-service	Subject-target	Geography	Planning	How-to	Agency	Title
	X					Alcoholism Resources & services for NYC
			X			Pratt Guide to Planning & Renewal for NY
X[1]	X					Help For The Jewish Aged: Directory of Aids, Facilities and Services
X[1]	X					Guide to NYC For Persons With Physical Limitations
X		X				Directory of Health Services for Lower East Side
	X			X		Help: Resource Booklet for Women
X	X				X	Directory of Adult Education in NYC
X	X				X	Directory of Public High Schools in NYC
	X			X		The Bust Book: What to Do Until the Lawyer Comes
X[1]	X[2]					Public Service Directory for Citizen Aides
	X					Services in NYC for Unmarried Parents
X[1]		X				NYC Chinatown Social Services Directory
X[1]	X[2]					Directory of Social and Health Agencies of NYC

1. General Services, not "Specific Services."
2. General Targets, not "Particular Target Group."

(continued)

FIGURE 2-1

SAMPLES OF NEW YORK CITY DIRECTORIES

(continued)

Subject-service	Subject-target	Geography	Planning	How-to	Agency	Title
			X			Community Planning Handbook
X[1]		X				Community Resources Inventory HRD #8 Crown Heights
	X			X		Do's and Don'ts for Senior Consumers
X						Free Social Hygiene Clinics
X					X	PRCA Where Book
X[1]	X					Directory of Services for Senior Citizens
	X					Resources for the Orthopedically Disabled in NYC
X[1]						Guide to Community Resources
X[1]	X					Directory for Spanish Speaking New York
					X	Directory of Major HRA Programs
X[1]	X					Inventory of Youth Services in NYC
X	X					Directory of Services for the Drug Abuser and Addict in NYC
	X					Drugs: Prevention and Treatment Facilities for Addicts and Alcoholics
X[1]	X	X				Resources in Manhattan for the Brain Injured and Learning Disabled

1. General Services, not "Specific Service."

(continued)

FIGURE 2-1

SAMPLES OF NEW YORK CITY DIRECTORIES

(continued)

Subject-Service	Subject-target	Geography	Planning	How-to	Agency	Title
X						Directory of Day Care Services in NYC
					X	The City of NY Official Directory
X						Directory of Post-Secondary Continuing Education in NYC
	X					Directory of Agencies for the Blind in NYC
	X			X		Rights and Benefits for Older New Yorkers
X						Museums of New York City
X						Directory of Family Planning Services in NYC
X[1]		X				South Bronx Guide to Community Resources
X		X				Directory of Mental Health Services for Queens Residents
X[1]		X				West Side Resources
X[1]		X				What's What on Staten Island
					X	The Salvation Army Centers and Services in Greater New York Area
X[1]		X				Upper Manhattan Resource Directory
				X		Visiting Nurse Service of NYC Fact Pack
X						Vocational Training in NYC: Where to Find It
X[1]	X[2]					Call for Action: A Survival Kit For New Yorkers

1. General Services, not "Specific Service."
2. General Targets, not "Particular Target Group."

22 Urban Action Task Force Offices

12 Other New York City Government agencies (City Council President, Majority Leader, Mayor's Action Center, Washington office, etc.)

6 Health units

2 Federal Agencies (SSA, Model Cities)

10 City Departments (Housing Development Administration, DSS, Human Resources Administration, City Planning, Board of Education)

2 State Schools

2 Libraries

2 Union Offices

7 Voluntary agencies

1 Police precinct

No strict monitoring was done by IRMA, few of the agencies kept records of their I & R volume, and none recorded references to IRMA. The surveys that were conducted consisted of staff interviews with users. The field reports included in depth information about the site, its activities and neighborhood, and the individuals using IRMA as well as information about IRMA usage.[1]

Follow-up IRMA I Survey

A year and a half later, in the spring of 1973, a telephone survey of 43 IRMA I users was conducted. Many personnel shifts had taken place since the first survey, and it was difficult to locate users familiar with IRMA over an extended period of time. Because records had again not been kept (a recurring problem in all user surveys) those users who were successfully traced could only estimate the number of references made to IRMA per year.

In-house Pre-publication Test of IRMA II

In May 1973, IRMA conducted an in-house test prior to microfiche publication. It was the first test applied to IRMA II and was initiated to get indications from potential users of the quality of the directory data, and to determine whether IRMA's estimates of minimal informational elements came close to filling the need. The test took place with representatives from nine typical user agencies on the IRMA premises.

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1. Appendix D: Directory Testing; IRMA I, Field Reports

There were several concerns: the accuracy and detail of the service classification; the ease and utility of micro-fiche; the reaction of potential user; the speed, relative to erstwhile I & R practices, with which an I & R specialist could reach a service through IRMA; the initiation of some method to test and evaluate directory usage in an I & R setting. For comparative purposes two tests were undertaken -- one on IRMA, and one on the leading social services directory of the city -- Social and Health Agencies of New York City, published by the Community Council.[1]

Field testing on IRMA II

It is important to emphasize that IRMA II was distributed to test sites for experimental purposes, not for appraisal as the complete information tool it would eventually become. It was an interim product meant to identify those aspects of data and accesses to data that proved useful, to determine how users utilized any human services information in directory form and to provide empirical evidence so that the next planned stage would conform more closely to the I & R specialists' needs.

Site Selection[2]

IRMA placed minimal requirements on the selected facilities. Subjects for testing should have high volumes of inquiries, agree to our test conditions (submission of weekly log sheets on usage of IRMA), and obtain the necessary micro-fiche reader. Finally, test sites were selected so as to provide an equitable geographic spread.

From among IRMA I users, three Queens branch libraries were selected: two are participants in the experimental I & R program, (NIC). For contrast, two locations at the Manhattan Central Library office were chosen, and later, two other community branches of the Manhattan Library, and one branch in the Bronx became test sites. IRMA concentrated much of its testing in libraries in anticipation of the CUIC program's eventual implementation.

Three offices of Neighborhood Government also represented IRMA I users, as did the Mayor's Action Center.

The SSA was among those expressing an urgent need (federal guidelines having recently mandated that they strengthen their I & R services). They chose nine sites from their 25 or more offices. The Community Information Office of the New York City DSS (in acknowledgment of their previously cited obligation) selected twelve sites: one Senior Citizen Center, one Child Welfare Office and 10 Community Service Centers.

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1. Community Council of Greater New York, Directory of Social and Health Agencies of New York City, Columbia University, NY, NY, 1972
2. Appendix D: Directory Testing; IRMA II, Location of Test Sites

Two general I & R sites were chosen to offset the direct service aspect of places like the libraries and Social Security Offices: one was the Citizen Advice Bureau (CAB) in the West Bronx, and the other a center in a housing project in the South Bronx -- the Bronx Federation of Community Organizations.

Training[1]

Agencies selected as test sites sent from one to three people to the IRMA office for a half day training session. Some expected, in turn, to train others. The personnel sent were those workers who would actually be using IRMA, in some cases accompanied by interested executive directors or supervisors.

The session consisted of detailed description in the use of IRMA II: how to access it, how it's organized, information contained, etc. Micro-fiche usage was explained. Next a step by step example of IRMA was presented, and the maintenance of a weekly log record was demonstrated. The final period was devoted to helping the individual trainee to become familiar and comfortable with the tools.

Field Visits

IRMA usage was recorded by each site on a weekly log sheet made up of two parts -- one used to note additions or corrections to facility information, and one that listed subject sections to record the number of times each week particular sections were accessed.[2]

A week after the training session, each site was visited by an IRMA staff person who filled out a user and facility form designed to provide profiles of the information and referral specialist and his setting. Other forms were used to record volume, procedures followed, records kept and other special characteristics of that site's routine. The staff also ascertained that there were no residual unanswered questions on the use of IRMA. In addition, a monitoring program was instituted, but found to be unworkable for reasons discussed later. This program was based on an MIT formula on testing and monitoring techniques.[3]

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1. Appendix F: Directory Examples; IRMA II, Instructions
2. Appendix D: Directory Testing; IRMA II Field Testing, Materials
3. Appendix D: Directory Testing; IRMA II Monitoring Plan

III. STUDY, ANALYSIS AND FINDINGS

In this section results of the surveys summarized in Section II are discussed. In each area under investigation, conclusions are drawn and inferences made relating to IRMA's development. They include:

1. Potential application of elements from other systems both in New York and outside.
2. A profile of the information user in New York City, particularly as that user relates to IRMA.
3. Sources and means of data collection.

A. FINDINGS FROM SURVEY OF OTHER SYSTEMS

The surveys had been undertaken to identify elements of other systems relevant to the IRMA system and to ensure that development would not be too narrow to meet New York City needs, nor preclude IRMA systems implementation in other locales.

Computerized Information and Referral Systems[1]

It was found that very few agencies involved use computers directly in the I & R process. Those that do, utilize them in two major areas: terminal access and data base maintenance.

Terminal systems surveyed relied on "menus" -- a gradually narrowing sequence of retrieval choices supplied by the data bank according to different sets of classifications. The systems produced no directories and a limited number of alternative methods of access and display.

Investigation of data base maintenance systems used by I & R agencies resulted in no findings of direct benefit to IRMA. All software found had been developed in-house at the observed system and was rejected as irrelevant to the implementation in the IRMA system because of problems of cost and replicability or lack of flexibility. The surveyed systems that employed terminals appeared to have no reasonable report generating or batching power. Nor could they handle free text effectively.

Related Systems

Survey findings of other systems uncovered a variety of uses for service information.

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1. Appendix B: Survey of Other Systems.

In some (Chattanooga, NSSIS), the emphasis was on client tracking. These tend to limit their scope to particular service areas or clients so as to enforce the accountability of agencies, insure service delivery and provide an evaluation process. Less emphasis was placed on a facilities resource file. Several (Wisconsin, CAB) concentrate on functioning as referral centers with the focus on accessibility to the client and the performance of extended referral services. Other systems (CWIS, Lancaster) have the goal of gaining objective evaluation of services, delivery impacts and effectiveness and, as an offshoot, the exposure of service gaps.

Some New York systems have developed information resource files for special purposes; i.e. The Mayor's Action Center, in government services and The Community Council Information Bureau, in special counseling services. These and others like them do not rely on broader based directories except for cases outside their field. The same is true for referral centers serving particular neighborhoods. All operational systems studied combined the functions of Information and Referral.

IRMA has defined its primary role as an information system producing directories to serve referral centers. The survey turned up no operational system which defined its role similarly. Thus IRMA's interest in these other systems centered on the utility of their information structures. Emulation of the systems themselves after this analysis was not seen as a viable factor.

But of particular interest were the NEXUS post-coordinate method (selections of words to indicate problem definition), the UWASIS goal-oriented, pre-coordinated definitions of service and the Indianapolis adaptation of it (ISIS), the hierarchical table used by the Model Cities Community Information Center, the program and activity definitions of the Lancaster County Information System, the SEARCH grid method of matching problem to program and the Baltimore Health and Welfare Council's set of classifications for source of inquiry and kind of facility references. Analyses of these approaches and study of their services definitions resulted in very little change in the IRMA classification system, but did offer a wider vocabulary perspective and also underscored IRMA's conviction that a synthesis of these methods was possible.

B. STRUCTURE OF USER NEED FINDINGS

The spectrum of potential users of IRMA as a referral tool has been briefly summarized. The purpose of this section is to draw some conclusions about the nature of the user as he relates to utilization of IRMA versus other directories. This section will

be concerned with different users of social services information, will discuss the different settings in which those users are found, analyze the information products used, present a somewhat generalized profile of the IRMA user and present findings from the various surveys IRMA has conducted on two interim IRMA products. This section also includes a discussion of terminology, one of the cornerstones of any information system.

The primary users indicating a need for human services information and the ones for whom IRMA is primarily designed are the referring agencies. Among other users are management and planning units and research groups. All three groups have varying requirements. (Figure 3-1)

Management and Planning; Research Groups

Management and planning groups need information such as geographical and demographic characteristics of an area, and the administrative structure, staffing and funding patterns of a facility. If client-tracking is a goal, client characteristics and activities become important; if vacancy control or land use is the objective of a study, waiting lists, populace served and physical layout (such as available beds) might be paramount. The same set is useful in the analysis of existing services for purposes of evaluation or for identifying unmet needs and overlapping services. A researcher in the consumer field, on the other hand, might require legislative options, a knowledge of citizen rights or an explanation of procedures to be followed.

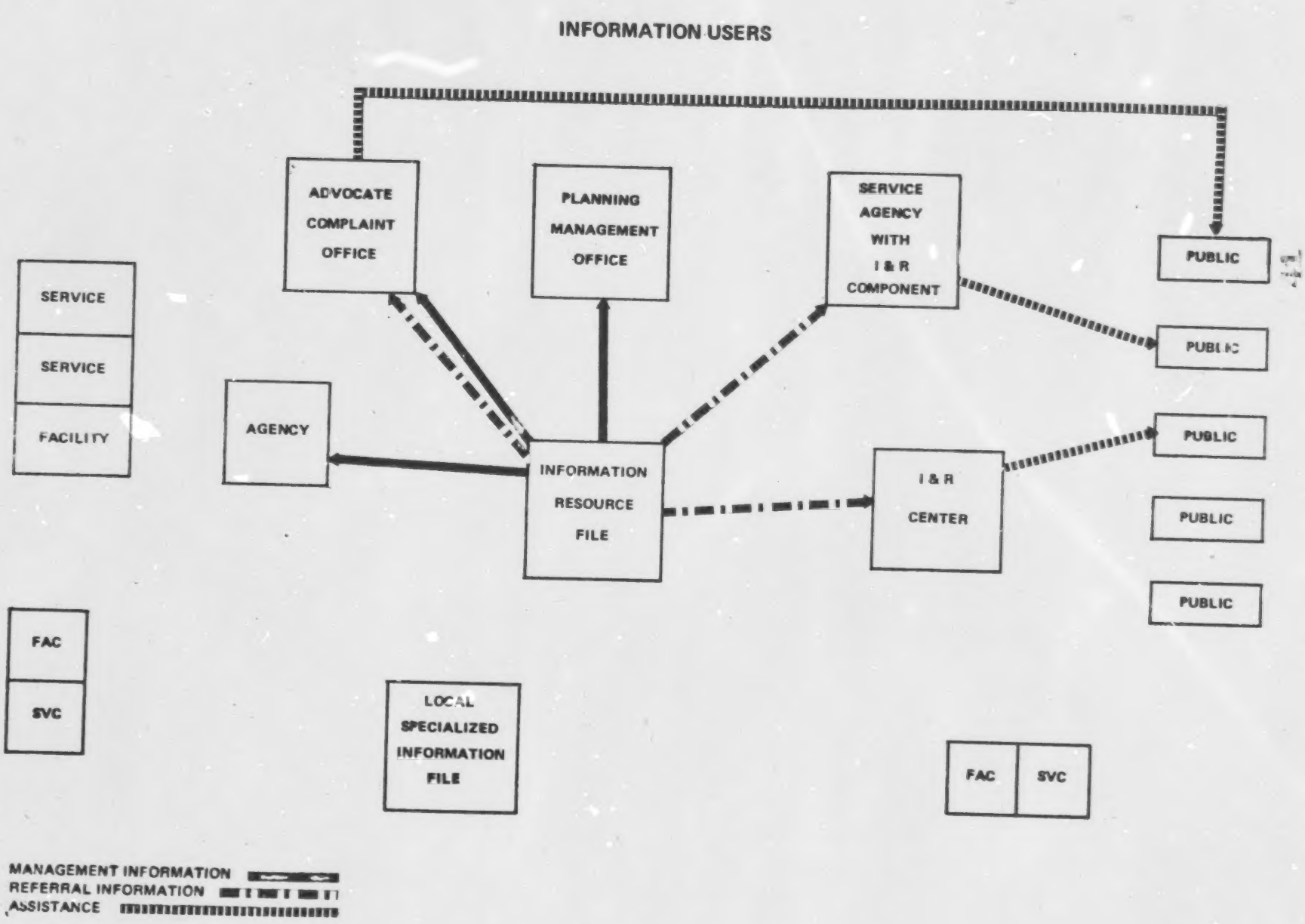
IRMA was not yet geared to provide for a data base on this scale. Consequently, data elements within such areas have been considered outside the scope of the project. However, an awareness of these and other uses of social service information is important to assure a systems design that would contain additive and linkage capabilities sufficient to accommodate such information in the future.

Referral Agencies

The office exclusively devoted to the performance of I & R has a more complex structure than does the I & R component of the direct service office. That structure includes the careful identification and collection of resource materials, the training of staff, time spent on articulating and solving problems, keeping of records and statistics and related tasks. They carry the client further toward service in terms of making appointments, doing follow-up and in some cases, even escorting him. Examples of such centers are NIC and CAB.

The direct service center with an I & R component (DSS, SAA) operates differently.

FIGURE 3–1


INFORMATION USERS
ADVOCATE COMPLAINT OFFICE
PLANNING MANAGEMENT OFFICE
SERVICE AGENCY WITH I & R COMPONENT
PUBLIC
PUBLIC
PUBLIC
PUBLIC
PUBLIC
SERVICE
SERVICE
FACILITY
AGENCY
INFORMATION RESOURCE FILE
I & R CENTER
FAC
SVC
LOCAL SPECIALIZED INFORMATION FILE
FAC
SVC
MANAGEMENT INFORMATION
REFERRAL INFORMATION
ASSISTANCE

Seldom are specific staff assigned to I & R or fully trained in referral techniques. Resource assistance is where it can be found from a colleague at the next desk, a publicity hand-out or perhaps from a personal compilation of information on neighborhood resources, or whatever directory is handy. Referral requests coming to such an office seem most frequently to fall into familiar areas and are dealt with in a routine fashion without recourse to any secondary resource. Agency complaint offices conform to this mode of operation as well.

A third setting is the community based agency which engages in local action programs, responds to perceived need for such things as vocational training, daycare centers, recreational programs and the like which also considers I & R an important service to the community. These operate on still a different level. In a practical (unstructured) sense, they identify the necessary directories or local agencies and tack the information up in some convenient place. These offices also tend to rely on information indigenous to the neighborhood e.g. political organizations, church affiliated groups, neighborhood councils, and the like. Again, they tend to react to problem solving spontaneously, rather than in the structured manner described above. Neighborhood government offices and Community Corporations and their delegate agencies appear generally to operate in this way.

There is another group of referral centers in offices concerned with specialized fields: the Office for the Aging, Addiction Services Agency and The Department of Mental Health and Retardation, for example. These offices keep current lists of relevant programs and the method of referral is usually by telephone manned by one, or at most two, experienced and knowledgeable staff.

Advocacy and counseling programs (Call for Action, Community Council) concentrate on follow-up, feed-back and service accountability. Their programs are staffed by well-trained social workers or advocacy specialists, and see as their goal specific problem solving through counseling and advising, rather than general dispensation of information.

Increasingly, institutions are finding that I & R is a necessary adjunct to their normal services. Hospitals, such as Bellevue and Kings County, high schools, colleges and even banks are exploring methods to add viable I & R components. The I & R functions of these organizations are generally the least organized and structured to date, but they do represent a growing awareness of the need, despite their hesitant approach toward operational programs.

And finally all helping agencies find themselves in the loop of referring clients among themselves, whether or not they consider I & R in formal terms.

BEST COPY AVAILABLE

Information Products: Directories

In general, major drawbacks of city directories were inadequate updating, and maintenance. YSA[1] and Community Council[2] publish every two years (with verification, of course, preceding publication by a considerable time span); two of the best in their respective fields (the Department of Parks Where book[3], and the HIP Guide to Community Resources[4]) ceased publication for lack of funds; others were published only once (NAACP-College, It's Really Together[5] - scholarship information for blacks).

The thirteen directories more closely analyzed included four city wide directories, two agency program directories, two health care guides, an official NYC Directory and four geographically focused directories. They varied in cost from nothing to $20; in number of entries from 65 to 3,100; in nature of information from simple name/address listings grouped under general headings to extensive descriptions. Six were issued in 1970, four in 1971, and three in 1972/73. The indexing went from a simple table of contents to a mixed index of agency names and clue words or related terms. Larger directories used more facility cross-referencing and multiple appearances of the same facility.

The categories of services classification schemas went from a low of 12 to a high of 220, the latter being a mixed bag of corporate headings, keywords, program names, and actual subject classification terms.

The directories most often mentioned by practitioners contacted by IRMA were the Green Book (The City of New York Official Directory[6]), The Community Council's Directory of Social and Health Agencies in NYC[7] (The Red Book), the HRA agency publication of programs[8], Board of Education literature and local directories. IRMA I, Call for Action[9], and Public Services Directory for Citizen Aides[10] (published by the Complaint Center of the Mayor's Office in conjunction with IRMA) were also mentioned.

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1. Human Resources Administration, Inventory of Youth Services in New York City, HRA/Youth Services Agency, New York, New York 1971.
2. Community Council of Greater New York, Directory of Social and Health Agencies of New York City, Columbia University Press, New York, New York.
3. Parks, Recreation and Cultural Affairs Administration, Where Book, Parks, Recreation and Cultural Affairs Administration, New York, New York, 1970.
4. Health Insurance Plan of Greater NY, Guide to Community Resources, HIP, Social Services Division, New York, N.Y., 1970.
5. Lee, Dave and Walton, Portia, College -- It's Really Together (a guide to College), NAACP Special Conribution Fund, New York, NY, 1967.
6. NYC Municipla Service Administration, The City of New York Official Directory, New York, N.Y., 1973.
7. Community Council, op. cit.
8. Human Resources Administration, Directory of Major HRA Programs, New York, N.Y. 1972.
9. WMCA, Call for Action. Call for Action, Call For Action: A Survival Kit for New Yorkers, Quadrangle Books, New York, New York 1973.
10. Citizen Feedback Unit/Project IRMA, Public Services Directory For Citizen Aides, Office of the Mayor, New York, N.Y., 1972.

The Official Directory of the City of New York[1] is useful for identifying elected officials and top personnel in City Government, locating city bureau offices, and getting some idea of government structure. It contains no program listings or descriptions. The Community Council's book[2] has been the social worker's staple for over twenty years. It lists facilities in two sections: one by subject classification, the other an alphabetical listing. The agencies write their own description and select their classification(s), within guidelines, and pay for each time their entry appears in the book. It is updated bi-annually and contains approximately a third of IRMA's listings.

HRA organizes its programs geographically and by subject and describes them well in the directory; updating is more or less on a yearly basis; the same is true of the Board of Education's Directory for Adult Programs.[3] Local directories contain neighborhood information only, and are seldom, if ever, updated.

Call for Action[4] contains well-written information on programs and agencies (numbering about 350), some procedural instruction, an excellent index and a collection of hot-line and emergency numbers. It concentrates on centralized services, and classifies the information by subject, and is updated every two years or so. The Public Services Directory[5] was published once and contains very limited information in matters of the most general interest. The alphabetical listings (and cross-referencing) of programs, clue words and facilities is its organization.

IRMA I was by far the most comprehensive of any compilation but, as mentioned, it was not widely distributed and had itself become outdated. It contained besides service/facility information, explanations of procedures, definitions of rights, glossaries and legislative and other background material. It was organized by hierarchical entries under each subject classification.

In addition to the foregoing aids, most community workers compile their own files of local resources on 3 x 5 cards, in a notebook, or tack them on a wall. Interviews and questionnaires have established that by far the most reliance is placed on these once a worker has become knowledgeable about the neighborhood and the clients the office serves. Where this kind of local file exists (and in many places it does not) it is undoubtedly very valuable and kept very current, but it also undeniably limits the scope of reference and discourages the worker from appraising alternatives for his client.

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1. NYC Municipal Service Administration, op. cit.
2. Community Council of Greater New York, op. cit.
3. Board of Education of New York City, Directory of Adult Programs in NYC, New York, N.Y., 1974.
4. WMCA, op. cit.
5. Citizen Feedback Unit, op. cit.

The ultimate directory for some workers resides in their heads; more than one worker has told IRMA that their experience and knowledge is all that is required to aid their community in locating appropriate resources.

Information Specialist Profile

The information specialist may or may not be a "specialist." IRMA has encountered the information provider as an MSW (Master in Social Work), Neighborhood Youth Corps teenager, librarian, volunteer (trained or untrained), para-professional, politician, radio announcer, case worker, college intern, receptionist and civil servant. All have different levels of education, different kinds of commitments and interests, different languages, and different experience. They may, by reason of their circumstances, be more or less receptive to the introduction of a new information tool and more or less sensitive to the encroachment into their province by the outside resource collector and provider of information.

User Terminology

A vocabulary describing social services that provides easy and successful association to recognizable services terms by all referral practitioners must be flexible and comprehensive.

Unlike the vocabularies of such disciplines as engineering or medical science or such industrial language as applies to ready to wear clothing or automobile parts, the languages of the social services are composed of changing, open-ended "soft" terms. Both the concerns and the organization of social services they represent are in a constant state of change. It is doubtful that any conventional standardization will ever exist. Not only do services change, but also attitudes toward services. So, therefore, must their names and descriptions. Poverty programs (or is it anti-poverty programs?) may soon give way to terminology implying the opposite -- self-sufficiency or independence programs.

Language changes also, as attitudes and practitioners change. "Welfare" scarcely exists as a term; "welfare" is now a set of specified social services. Rapidly even this loose definition is shifting from the recently devised "income maintenance" function to the new "Supplemental Security Income." "Birth control" evolved into "family planning" and so on.

Also preventing standardization is the fact that a service is commonly labeled by one of its parts (another reason for identifying those parts separately in service definition): an agency name (Salvation Army), a location (92nd Street Y), an activity (Methadone Maintenance), a program name (Headstart), a problem (child abuse), or a goal (High School enrichment) are but a few of the kinds of terms used to describe a service, sometimes exclusively, sometimes in combination with other terms.

Another factor preventing strict vocabulary control is the varying vocabularies among clients and referral practitioners. The terms used by either one may reflect colloquialisms, geographical biases, educational differences, greater or lesser familiarity with social service terms, etc. The client articulating the problem may be a Public Assistance recipient or a city bureaucrat: the interpreter may be a librarian, community organizer or Court attendant- or, indeed, the above roles might be reversed.

The goal, then, is to invent a lexicon which will fit a variety of situations, one function of which would be to aid in translation of the statement of a problem or question. No attempt prior to IRMA has been made in New York City to codify such a language. Such as exists (for purposes of directory referral) is fragmentary, applied in specialized fields only, or serves temporary functions.

IRMA's answer to this problem is the thesaurus now under development. IRMA has already created and tested a classification system which is at once strict and specific (in that it clearly separates service components, client target, type of service and subject areas) and yet broad enough to classify all existing services. It has, in fact, been adapted by the city-wide Department of Community Development and the projected information service for the State of Georgia. One portion (the concept of modifiers) has been adapted by the Easter Seal Society's Information Center in Seattle.

Briefly, it is a modular scheme made up of a set of services, two subservice areas and two types of modifiers- one describing a service further in terms of the client group toward whom the service is directed (physically handicapped, veterans, aged, etc.) and the other in terms of what is done in that service area (training, coordinating and planning, information and referral, etc.). Any number of separate services may be appended to the facility and any number of modifiers appended to the service thus considerably narrowing its definition and increasing its specificity and usefulness.[1]

Clear distinctions between service area, its type, and the client it serves, give IRMA the capability of retrieving information in any number of combinations. In addition it provides a potential training tool for the structuring of problems as well as forcing logical chapter definitions for a directory. It permits all levels of linkage and allows for the logical addition of new components.

IRMA's lexicon goes further. Services are then described and defined by a larger class of terms or combinations of terms culled

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1. Long, Nicholas, et. al., Information and Referral Services; The Resource File, Inter Study, Department of Health Education and Welfare, Washington, D.C., 1973, pp. 15-17.

from authorities, other human services vocabularies, professionals, and I & R specialists in the field. These words (called entry terms), when defined by sets of service and modifier descriptor codes, become the basis for a viable thesaurus. The "soft" language thus becomes structured and index options become virtually limitless.

User Profile

To define the user more narrowly, an analysis was undertaken to determine how the user related to IRMA from IRMA field test logs, surveys, tests and user seminars. The testimony in the long run was difficult to assess, as no analytical studies have been made nor techniques developed in New York for measuring information and referral volume as separate from other services delivered, inquiries requiring reference to an information resource, or resource usage in general. Nevertheless some patterns did emerge.

The initial contact between IRMA and the field sites was usually at an administrative level. Persons responsible for the delivery of services were understandably enthusiastic over prospects that their neighborhood workers would have city-wide knowledge for referral purposes collected in one place and instantly available. Practitioners themselves, however, had varied reactions to the usefulness of the new tool.

Those who were thoroughly familiar with their neighborhood, its resources and clientele continued to rely on the local list of telephone numbers and contacts they themselves had built up, and referred to IRMA only for the unusual request for a service not supplied by local community resources. This was partly because they had put some effort into the work. They were justly proud of it and felt reluctant to abandon the fruit of their labor even if a comprehensive directory also contained the same local resources. It was easier to stick with their own familiar patterns than to adapt to an unfamiliar new system (in this case micro-fiche) which required some getting used to. This was most noticeable among para-professionals, clerical workers, student aides and the Neighborhood Youth Corps working out of local store fronts.

Other factors influenced the usage of IRMA. One was the nature of the problems handled. Many offices delivered direct services, such as the handling of social security matters, or housing and income maintenance problems. As low as 5% of their activity might have to do with I & R. The clientele was stable and the processes routine. Referral materials were simply not needed. These (and others like Legal Aid), in many cases were also just too busy to consult comprehensive referral references at all.

Some offices reported taking necessary working information from the IRMA files and incorporating it into their own (some from a micro-fiche line printer) so that subsequently fewer references were made to IRMA itself.

Training made a difference. Where IRMA had been placed without sufficient orientation it was far less likely to be used than in those places where staff had been required to attend training sessions. The training consisted of an explanation of the system, demonstration of various techniques for accessing the information, role-playing and follow-up.

If a facility had only recently opened and the staff was unfamiliar with the neighborhood, or a new staff member was involved, IRMA's use was higher. In a setting where an individual was particularly dedicated to solving multiple problems, particularly zealous about uncovering them or imaginative and challenged by the use of resources -- this also made a difference. Among these were social workers, volunteers and curious students.

C. IRMA USAGE FINDINGS

Preliminary IRMA I Survey

From the field reports on 29 test sites using IRMA I came many enthusiastic comments and examples of problems solved, as well as suggestions for format changes and the inclusion of additional information. Principally the users wanted telephone numbers more specific than the public general information numbers and local listings; special topics and a replacement for the rolodex, preferably a looseleaf book. There were also sites that used IRMA very little because their referral requests were familiar and routine. But these either indicated that they would be using it more, or at least saw its value in a more appropriate setting where I & R was a stronger service component. Usage varied from none to 80 a week, with the average being 10 to 20 a week. Usage was highest where no previous knowledge of the community existed, or when the problems presented were varied and complex.

Follow-up IRMA I Survey

In the follow-up survey on 43 sites still using IRMA I, the findings covered roughly a year's period.

Here, references to IRMA ranged from a few to four thousand, with the median at 156, and the average at 2 a day. Together they reported references numbering about 20,000. These figures are not presented as any kind of meaningful statistic, but only as a general indicator. Quite a few places, for example, did not use IRMA for I & R, but for management and research purposes, or public relations. Major categories referred to most often were Public Assistance, Housing, Employment, Health, Drug abuse and Legal services. About 200 people in all varying from professional I & R staff to student aides had used it.

Twenty sites had used IRMA for the whole two and a half years, and 19 from one to two years: the majority had kept it a year.

Pre-publication Test[1]

The tabulated results of the 1973 in-house test of the city-wide micro-fiche directory were sent to MIT by AMRA for verification of the test procedures and MIT's general conclusions. Among their findings:

"The current IRMA directory, even in its present partial and preliminary form, is about as good a finding tool as the best comprehensive standard New York City directory of services: that of the Community Council."

In speaking of the future of the IRMA system, he says (in part):

"The IRMA directory has the excellent potential for development into truly a superior information finding tool. The particular areas in which there is high potential include: computer-assisted preparation, completeness, currency and accuracy of information; economy, flexibility, ease of use; more particularized and deeper indexing; more complete description; more standardized and compact descriptions; and specialized directories made automatically from selected subsets of the main directory." This was a gratifying confirmation of IRMA's own analysis of the test and plans for the future.

Field Testing of IRMA II

The field testing conducted on IRMA II (demonstration edition)[2] elicited findings on the access methods, facility selection and display techniques and tested the validity of the classification system, directory preferences, etc. It was <u>not</u> to test its value as an

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1. Appendix D: Directory Testing; IRMA II Pre-Publication Test.
2. Appendix F: Directory Examples; IRMA II.

immediate replacement for current information retrieval methods. The micro-fiche set consisted of a brief history of IRMA, subject classification list, 17 fiche, instructions for its use, and a set of related terms used as "pointers." Results showed some interesting parallels with testing on the IRMA I.

Volume

As before, the offices with the highest volume of direct service duties had the lowest volume of generalized I & R requests, and these were handled routinely by people long since familiar with the limited number of places necessary for their referral. These people used printed resources seldom--for the occasional unusual request. The highest usage was recorded by agencies of staff new to the neighborhood or by agencies with complex and varied problems to handle. This finding is the same as for the IRMA I.

The usual total recorded over a period of roughly three months came to just under 1500, or about 5 a week -- again the same as the IRMA I over its period of 2 years. Both these figures are fragmented by the fact that several places in both tests announced they had copied the most relevant sections, duplicated them and distributed them to staff -- thus making reference to rolodex or micro-fiche unnecessary, again point up the need for specialized directories.

Classification

The same general subjects as those cited for IRMA I received the most references, e.g. Health, Housing, Employment, Welfare. Many were satisfied with the broad categories of service listings, others wished that descriptions were more specific: another argument for the tailoring of material. This echoed a finding from the pre-publication test in which one comment on the Community Council's Directory listings was that there was too much to read through, while others had expressed a need for more specific description-service.

Access and Display

Half the people questioned in a user seminar about the city-wide edition said they could better utilize a neighborhood directory, and the other half said that since local resources were already known to them, the city-wide was more useful. No one objected to micro-fiche for display of a city-wide directory, but they did express a preference for a printed directory for local listings.

The related terms index was the more frequent access to the material as opposed to the subject sections or the facility index.

One comment was made to the effect that it should be expanded to include "layman's" terms cross-referenced to professional terms. In this edition the related terms could hardly be called an index as the terms pointed to subject sections not specific facilities. But the reliance placed on them indicated that the IRMA III indexes would get heavy usage.

Testing Methods

IRMA had a further purpose during the testing period--to test IRMA's own methods of testing. Conclusions in this area pointed to the need for more effective survey methods than currently exist, or than IRMA had the resources to devise and implement. An IRMA survey attempts to record the activities of busy people, or asks them to record themselves. It frames analytical questions in areas and in ways most I & R practitioners are not accustomed to responding to. For example, it asks them to note which access methods they used with a directory; how they interpret or define information requests: what per cent can be answered by a factual response, what per cent requires referral, etc.

The forms IRMA devised and on which its field-test information is recorded provided some fragmentary documentation on the user, the user's office, directory usage generally, and on the most heavily used categories of service, but they also pointed up the need for the application of other techniques. In this regard MIT's preliminary testing report is interesting. It takes into account the circumstances of the I & R worker and the need for more concrete findings, and suggests a monitoring system.

In implementing this technique, IRMA found other factors that entered into the situation. These included matters of confidentiality and the physical layout of the monitoring sites with substantial enough directory usage to provide meaningful observation.

IRMA's conclusion in this area was that a synthesis of methods might be effective for really measuring and comparing directory usage if carefully planned but that this should be the subject of an independent research project. The design components, human factors, statistical findings, volume considerations and scope of such a study are so complex, subtle and interdependent that it cannot be undertaken on a marginal level.

IRMA concluded from these general observations, that its conception of tailoring the directory to the circumstances of the user was a valid one. It also concluded that these circumstances

did not necessarily standardize institutionally. That is, not every SSA office reacted the same, nor each library. Rather each user setting had to be evaluated separately. Once again IRMA was confirmed in the design concept which allowed for production to suit practitioners in varied settings.

D. DATA ACQUISITION

Facility Selection

Different kinds of service information are amenable to different means of collection. Alternative approaches are evaluated in order to determine appropriate ones in terms of IRMA's purpose, scope, user clients and constraints operating on the system.

Human (or urban) services in the broadest sense encompass more than can ever be captured in a directory. Commonly identified areas are: health and social services; public services; the court system; recreational and amusement facilities; travel information; government structure; political parties and their services; construction in progress or projected; citizen rights and legal recourse; aid to the foreign born, religious institutions; foundations that offer direct funding; emergency services; community action groups; commercial enterprises; the needs of ethnic groups; individuals offering varied services and so on.

The horizon must have some limits and IRMA's were determined by two early decisions: one, to base the collection system on facility information; two, to build on IRMA I's tested classification system.

Facility Definition

The facility takes a primary place in the structure because it is there that a citizen goes or writes or telephones to obtain services. It is immediately identifiable as the location of service, and can provide the link for later expansion to non-facility information.

The selection of the facility as the unit of entry constrained the choice of areas in the urban services field to be included in the resources file as did the acceptance of the IRMA I classification system. Procedural information, political structure, individuals, and many other areas are clearly not facilities. Later such information might be entered into the existing framework or the framework itself might be changed. But to set up the data base, facility information came first.

The options IRMA rejected as primary entry units included programs or services common to many facilities, procedures, enabling legislation, secondary material references and many others.

IRMA's original list of classifying subject headings was somewhat modified, but basically facility information was collected in these broad areas: Animals, Armed Forces, Documents, Economic Development, Education, Employment, Environmental Protection, Family Services, Government, Health, Housing, Law, Recreation, Taxes and Transportation.

Facility Criteria

The first criterion for facility inclusion was that it offer New Yorkers a direct service, e.g. answer a question or need or solve a problem. It followed that indirect services were excluded. Indirect services are taken to mean secondary functions such as agency funding, administration, program planning and the like.

Many variables enter into the picture even for facilities providing direct services falling under the subject criteria determined. A facility may serve a very small geographical area or a large one; a restricted group of people or a broader group; the facility may offer one or many services; the facility may have been in existence a short time or a long time; the funding temporary or long term; the reputation for service known or unknown, the services may cost heavily or not at all; it may be government or privately sponsored; it may be unique or common.

Among the Community Council's standards for directory inclusion, are: that a facility have been in existence a year or more, that it have an office with a staff, and in the case of voluntary agencies, that it have a responsible board of directors. INFO, Information and Referral Service of Los Angeles County, Inc. has, among others: that the facility may not deny service on account of race or other discriminatory factors; that a substantial amount of free or low cost service be given.

IRMA's picture of its constituency - the information specialists and their clients - was a strong consideration in determining selection standards. IRMA's current set of criteria are the following:

1. A direct service must be offered on a sufficiently wide basis to warrant inclusion in the city wide directory. Sufficiently wide basis is defined as that activity available to constituents outside a parent organization.

Local tenant groups or block associations, church affiliated social services available only to its congregation, union benefits and the like are largely disqualified by this definition on the grounds that they are already known to the only people eligible for them.

2. It must be reasonable economically. This disqualifies the service that cannot be had free, purchased at an appropriate cost or unsusceptible to purchase with public funds (Public Assistance, Medicaid, etc.) for those eligible for them. Thus by definition the service would be government or non-profit. There are occasional exceptions where someone will consider certain services important enough to pay for them - when there is a conspicuous shortage within a specified service (nursing homes, for example), when a necessary service is unrepresented by the non-profit agencies (professional schools) or those services needed are not immediately available due to over-crowding (special camps, emergency taxi service, etc.).

3. No evaluative criteria (such as how long operational or funded, kind of staff, etc.) are applied. IRMA considered itself an impartial repository of verified information, offering as many alternatives to the user as possible. If it qualified as a direct service and answered the phone, it went in. This further underlined the difference between an information resource file and its user who would have every reason to want to evaluate a service. Indeed, the users' own evaluation standards might vary according to client need in differing settings. Evaluative standards are even less codified than descriptive standards.

4. If IRMA accepted a class of service, the goal was to include all the facilities offering that service. This would create confidence that duplicative directories were unnecessary as well as lend credence to IRMA's assertion that if a facility was not listed, it was not there. There can be contradictions that must be dealt with. IRMA includes <u>some</u> churches because they deliver other than religious services to the community - but not all churches.

5. If certain groups of services were deemed too large for the amount of original research entailed (as they were not present in the current information structure based on the material in IRMA I or PROBER), they would be excluded in their entirety. Examples of these that emerged

were: volunteer opportunities, commercial facilities or professionals offering Medicaid-supported services, foreign agencies (embassies and consulates), public interest groups, political clubs or civic organizations; media facilities. In this regard, IRMA did make one effort to collect information in a special service field - that of licenses. A list of government issued licenses appears in The City of New York Official Directory[1] and IRMA attempted to track each to the facility issuing it. The experiment had to be abandoned as far too large an undertaking for IRMA resources at the time... more or less proving the above point.

6. Information would be non-discriminatory, economically speaking, as opposed to whether it charged or not. It would be directed at a client need regardless of whether that client is poor or middle class. The middle class citizen might be just as much in need of assistance on a tax or real estate problem as the public assistance recipient on a housing problem. This standard was mandated by Administrative Order No. 28, if for no other reason.

7. Editorial supervision and control over what facilities and information about them went into the various directories and how entries were phrased and arranged was retained by IRMA. Agencies would not be writing their own blurbs.

Facility Type

Another attribute of a facility is its type. As already indicated, IRMA collects information on facilities that are operated by either city, state, federal, voluntary or proprietary agencies, and so designates them for reasons, among others, of identification, service association and linkage. However, these distinctions are not always clear, and frequently facility personnel do not themselves know their type.

Suffice it to say here that designations are obtainable: legal names offer clues; structural manuals exist; authorities from the agencies themselves (or outside of it) are frequently knowledgeable. An agency infrequently changes its status, so that once its type is established that particular grain of information remains the same. This doesn't mean it won't change its name or administrative relationship, but that is a different consideration. A voluntary agency is unlikely to become a state agency or visa-versa.

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1. NYC Municipal Services Administration, op. cit.

Facility Information Collection: Sources and Methods

Sources and methods of collection offer a wide range of possibilities (See Figure 3-2). Sources can be secondary or direct. Secondary sources include directories of all kinds, specialized or general, old and new; in-house program or facility identification listings, newspaper clippings, institutional literature, government publications, surveys, word of mouth and even the telephone book. Community newspapers, radio, television and subway ads are others. Direct sources include local agencies, funding sources, licensing bodies, federations, and service agencies themselves. Liaison networks within a selected group present still another route. Deciding what is useful, practicable and reliable from among these determines how the collection effort will proceed.

Different information sources yield different types, qualities and quantities of information. The greater the number of information sources used, the less consistent and more contradictory the data will be. This leads to the problem of systematizing it later. At the same time it is beneficial to use as many collection sources as possible in order to gather the widest range of available information and to cross check sources against each other. In any event, it is imperative that the biases and limitations of each source be recognized.

Associations and Federations

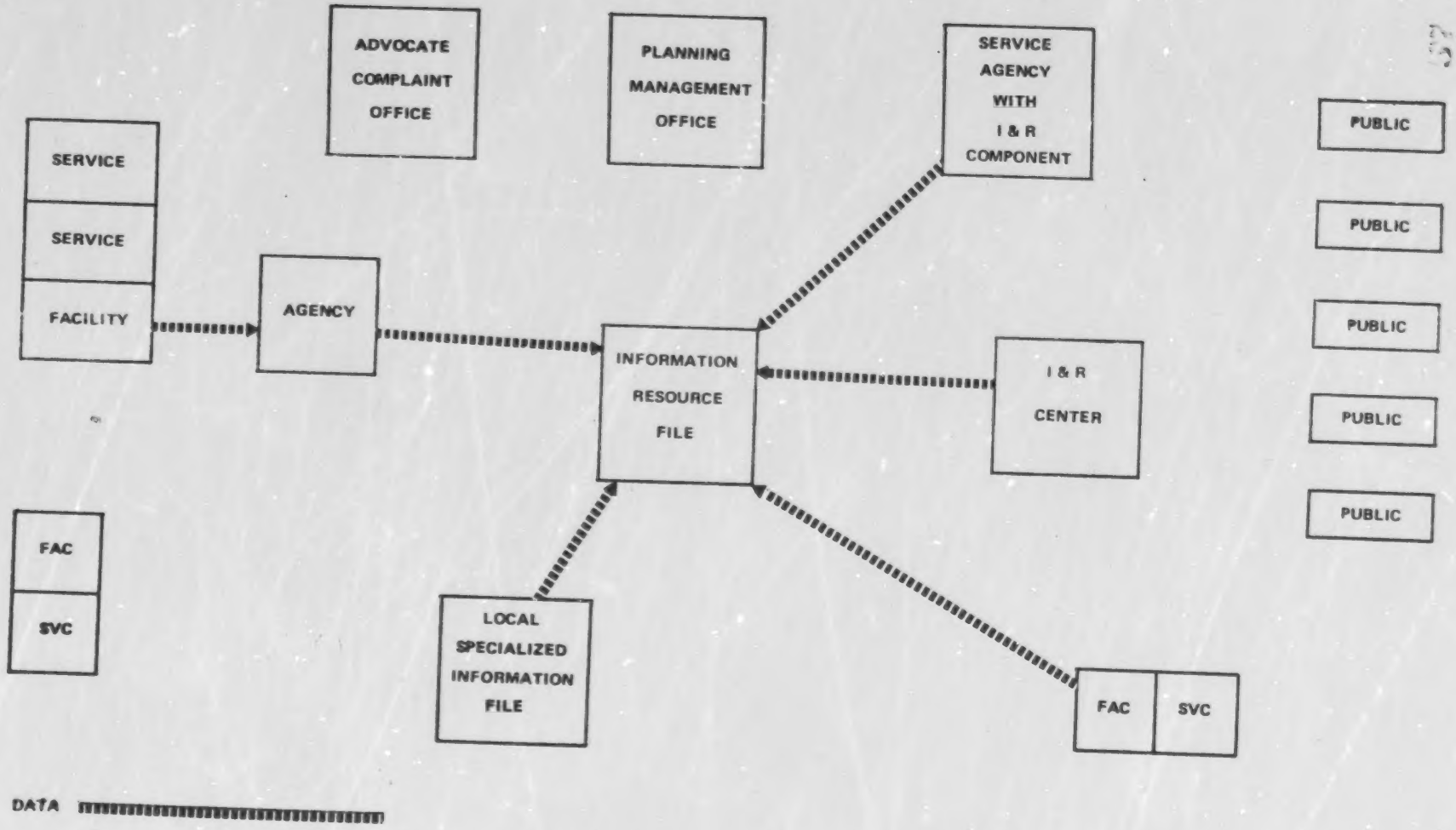
Organizations, like Catholic Charities, Federation of Jewish Philanthropies, Federation of Protestant Welfare Agencies, United Neighborhood Houses, etc., frequently have information on their member agencies. Even if their information is incomplete, as in the case of Federation of Protestant Welfare Agencies, the organization can still be helpful by providing names of contacts and by explaining the relationships between the agencies. Furthermore, these organizations themselves run programs although even where such an organization is willing to provide a great deal of information on its member agencies, it is advisable to check some of it with individual agencies. This is particularly true of information regarding affiliation/cooperation/administration. The association and the individual agency may have different views of the nature of their relationship, and if they do, these differences must be resolved.

IRMA put a major effort (separately funded by the Edwin Gould Foundation for Children) into the collection of information on voluntary facilities through this route. A full three months was spent on sifting information from the Greater New York Fund files on their membership agencies, which they generously opened to the IRMA staff - and transcribing it onto IRMA worksheets.

The Greater New York Fund was for IRMA one of the best sources for information on voluntary agencies. In part this was due to the

FIGURE 3–2

COLLECTION PROCESS



sheer size of its files and membership of over 400, and in part due to the demands made upon its funding recipients. Catholic Charities, United Neighborhood Houses and the Salvation Army were also contacted.

Some Associations and Federations (like the Greater New York Fund) also function as funding sources. Sometimes, but not always, funding sources maintain fairly complete dossiers on the agencies they fund. This information may be geared toward complete financial information rather than program information, however, as the individual agency may not keep the funding source up to date on program changes. Time pressures and lack of resources prevented IRMA from investigating other funding sources in any depth.

Licensing Agencies

Certain services must be licensed by some level of government. Therefore, the licensing source itself can provide information on agencies. This information may be simply names and addresses or it may be more complete. One of the virtues of information from a licensing source is that whichever items about a facility they decide to collect, they will collect consistently; a government agency dispensing licenses will have a set of rules for information collecting, even if what they collect is minimal. Associations and/or funding sources generally collect information on a less systematized basis.

IRMA realized quite early that while these agencies represented a potentially rich source of information, their scope was far too wide. Files such as those of the Board of Health and Board of Higher Education are examples of sources that have been relatively unexplored.

Service Agencies

Quite a number of agencies, government and private, compile information on services offered to the public by themselves or other agencies. These collections can be of varying use depending on their method of collection, quantity of information, data collected, etc. New York City Addiction Services Agency, for example, kept a card file of information on private drug programs. This information,while collected in a rather haphazard fashion, provided IPMA with a good start in this area. Many agencies base their collection on the work done by other organizations, not on original collection. This may mean out of date information and the perpetuation of misconception. Therefore IRMA only accepted information from these sources after checking with other sources, or verifying the data with the facility itself. A case in point is the compilation by the Department of Social Services by Human Resource District from secondary sources (including

IRMA I).[1] It was published hurriedly, and was not meant for general distribution. It was needed to give their caseworkers some assistance in the field, as the computerized IRMA was by no means ready. Timing, incidentally, had a lot to do with other agency's collection efforts to serve particular purposes. Had IRMA been able to keep to the original computerization schedule, several agencies reported they would not have embarked on collection efforts of their own.

Liaisons

IRMA found that government agencies are best researched through liaisons, whereby a contact within each government agency acts as the official information source. A city, county or state official requests department heads to be responsible for providing information on a regular basis. The officials designated are required to understand the purpose of the project and the worksheets or forms they must fill out. The efficacy of this method lies in the fact that government agencies generally have a central administrative office responsible for the operation of many public facilities with a knowledge of their program's operation. Despite some shortcomings of this system, the alternative of researching these programs individually would ha e been a herculean task and prohibitively expensive. Further, since IRMA was a project of the city government, empowered by the Deputy Mayor's Administrative order to collect information from city agencies, it could be presumed that they would be cooperative. Indeed, it would be to their own interests to do so -- each would eventually be called on to deliver the very service they were describing.

This is in fact what happened. The Deputy Mayor-City Administrator called a general meeting at the IRMA offices of such liaisons from among city agencies, mostly at the commissioner level, at which they were thoroughly briefed. They were then asked to designate a liaison - themselves or a subordinate - who was then charged with filling out IRMA worksheets.[2]

Verification: Individual Facilities

Once decisions were made regarding the nature of the information, attributes of service and the sources from which such data would be collected initially, the method for carrying out the process of acceptable verification was examined. Verification is, in effect, the maintenance of the integrity of the data base. As it turned out city-wide collection was done only once. Basically this was done through liaison with the government agencies, through Federation file resources for the voluntaries and through unduplicating the existing IRMA I and PROBER files. Everything that followed was one form or another of verification or maintenance (See Figure 3-3).

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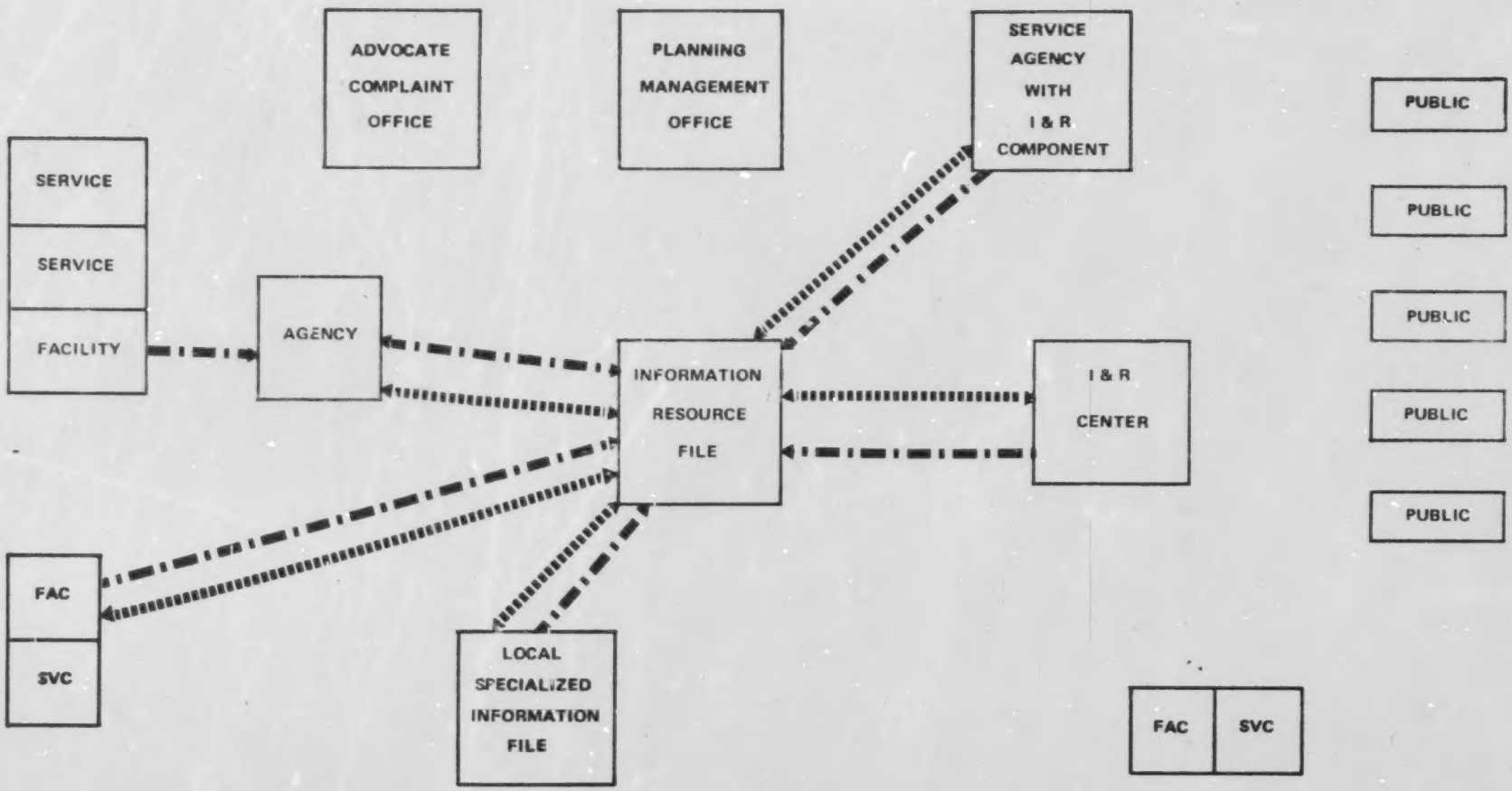
1. Community Social Services, Community Resources Inventory HRD #8 Crown Heights Brooklyn, DSS, Office of Research and Evaluation, N.Y., N.Y., 1972.
2. Appendix A: Administrative Order No. 28.

FIGURE 3–3

VERIFICATION PROCESS



Again, there are many levels to choose from - from name and address returnable postcards to on-site visits and client follow-up. Secondary sources can be compared on a single facility or every facility telephoned. If they are telephoned or written, information obtained may either be held to a set list of questions or services may be generally described. Practical verification procedures were developed to provide the particular data sought. As a corollary decision, the collector must decide what quality of verification is appropriate and upon what basis incompletely verified facilities will be excluded. At the beginning of the Philadelphia Model Cities Program, it was decided that their priorities were such that they would do no verification at all, depending instead on user verification or feedback.

For practical reasons telephone verifying is a difficult method of updating. IRMA lists 6,000 facilities and to call every one of them would take approximately eight man-years. With that kind of volume it is obviously an impractical method. Another difficulty is that every phone call or visit to an agency necessitates the same explanation of the purpose of the directory, what type of information is needed, etc. Furthermore, personnel at individual agencies are often suspicious of questioners. One agency had its lawyer call to ask why IRMA requested information on its fees! Some are reluctant to take responsibility for giving information and buck the call on up the line, a time consuming process. Some are just too busy to stop and supply the information. Some require an explanatory letter. Nevertheless, there is often no alternative to simply calling a group of facilities to verify their services: it is, after all, their public duty to give information on their services. IRMA employs this method mostly for spot checking and updating or sometimes for a small specialized geographic or service area. Frequently information has to be collected quickly or certain missing elements need to be obtained. IRMA, for example, to validate the data base, prior to publication, using a random number selection system, telephoned 10% of the facilities listed.

Other methods IRMA has used include guaranteed returnable postcards and feedback from test sites. Computer produced name and address postcards were mailed to all the facilities in the data base, prior to publication of the city-wide edition. It was assumed that if the card was not returned, the facility existed and could be reached at that address. Only the name and address, in this case, were being verified.

In an effort to capitalize on the knowledge of users in the field and use it as a maintenance tool, in effect, IRMA gave every test site forms on which to identify missing or incorrect facility

information.[1] This method assumed a minor role in the verification scheme, however, when it was found that the volume of the listed facilities consulted by the test site users was too small and too few update forms were submitted.

One other verification survey was made. IRMA was fortunate enough to have the part time aid of a college student for a year to make an on-site survey of service delivery agencies in two areas of Brooklyn: East New York and Flatbush.[2] This study concluded that IRMA's data base contained the necessary and relevant facilities for those areas. Others he came upon through contacts and block walking appeared deserving of closer study to question quality and continuity of service delivery and legitimacy of sponsorship.

Secondary Resources

IRMA found a library of secondary resources essential to the updating process. Secondary resources were valuable not only in the introduction of new facilities, but also for comparative reasons. Emphasis, style and inclusion factors vary from one directory to another. But from examination of several on a given facility, services can be confirmed or discovered -- or conflicts revealed which require direct verification by IRMA.

Over the years IRMA has tried many techniques for capturing accurate information and concluded that the most effective way to obtain information is to offer it. Agency personnel are invariably more responsive when asked specific questions in terms of what the inquirer already knows about a facility's services than they are to general questions, even when the data sought is identified by a prepared set of questions. One of the best ways for the information collector to do his homework and fill in some of the blanks is through consulting secondary sources. This also avoids redundancy and conserves the time of agency personnel.

IRMA has amassed a resources library of some 600 items. This includes general directories, agency brochures, departmental listings, specialized directories and so on, classified by a list of subject, modifier and other codes. Cataloging them is an on-going process of updating, changing and adding to the material and, most importantly, cross referencing it. In this process, the IRMA facilities name and ID number is attached to any bibliographic source in which that facility is listed and stored in the computer. Retrieval requests will automatically list those documents that contain any reference to a facility - by page and physical location. Cross-reference checking helps in the data collection process and in validation of services performed.[3]

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1. Appendix D: Directory Testing; IRMA II Field Testing Materials.
2. Appendix E: Facilities Surveys; Community Surveys, East New York/Flatbush.
3. Appendix H: Data Bases; Report Samples, RESIRMA, XREFIRMA.

IRMA I: PROBER

Information from IRMA I which served as a major portion of IRMA II's data base, was collected for the most part through secondary sources. On the other hand, PROBER, which formed the other major base, used two other methods for original collection. Students were employed through the Neighborhood Youth Corps for a block-to-block survey and completion of worksheets throughout the city. These at minimum ascertained names and addresses of agencies which were followed up by mailed questionnaires in greater depth.

Public Notices

Newspaper clippings, radio announcements and subway ads were used to find leads, particularly on lesser known, very recent or added services such as half-fare cards for the elderly. Community newspapers were also scanned for announcements of new local offices and for outreach notices for such programs as Supplementary Income Alert, etc. The information yield, as in the case of other resources, must be balanced against time and effort spent and, if the information is perishable, how soon it can be processed into the data base. IRMA has not been able to do as much in this area as the volatile nature of the material actually demands.

Community Consultation[1]

In an attempt to forge a closer link between the user and the data to be used by them, IRMA sought the aid of certain key agency personnel at the local level in the construction of a neighborhood directory. The community selected was Crown Heights[2] in Brooklyn and the agencies contacted were a mixture of city government (Office of Neighborhood Government and the Department of Social Sciences), voluntary (Urban League) and religious groups (Catholic Charities and the Jewish Council). IRMA had understood from its numerous contacts in the field that most neighborhood agencies charged with an I & R function made informal collections of local information - and one of IRMA's aims was to incorporate such information into the data base if it did not already exist. This would both test the completeness of the present data base and insure comprehensiveness at the local level.

Another aim was experimental - to broaden the criteria, for the possible inclusion of facilities screened out by earlier criteria, e.g., political groups, businesses, civic associations and even churches or synagogues.

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1. Appendix E: Facilities Surveys; Community Survey, Crown Heights.
2. Crown Heights, a Central Brooklyn community composed of six neighborhoods, was chosen because it had a fairly even spread of representative services, had been selected by other programs for study and demonstration projects, it had an ethnically mixed population estimated at 225,000, three-fifths of which is black and four percent is Puerto Rican. The rest are white with a heavy proportion of Hasidic Jews. A Haitian community is growing.

IRMA was also interested in testing for a quality criteria: whether or not the community would elect to exclude certain facilities on the basis of performance and relevance. IRMA intended to elicit from community residents just what it was they would like to see appear in their directory; what information would be most useful. IRMA also expected to learn some of the distinguishing characteristics of the neighborhood, if possible. While the parameters of this experiment did include an attempt to find out what information they found necessary outside the boundaries of Crown Heights, it did not include an investigation into what particulars concerning a single facility they might find helpful. IRMA had already expanded the scope of service information and would present worksheets enumerating the new service information to be coded. Here, IRMA was only concerned with the scope of facilities to be included.

It appeared evident that there was only one method by which any significant amount of new information could be added to the data base. That was to enlist the active cooperation of the agencies involved and the contribution of staff resources for the tasks of encoding inputs to the data base. It was more than a practical matter. IRMA hoped, indeed assumed, that agencies describing their own or other local services through personal knowledge and/or visits would provide instructive and realistic definitions of services and insights into terminologies.

Initial promise of these resources, as well as expressions of enthusiasm for the idea prompted the IRMA staff to prepare the groundwork.

Accordingly IRMA set up a meeting in Crown Heights, prepared an agenda for it, designed forms and questionnaires to obtain the information sought and made multiple copies of a computer proof listing the 100 or so Crown Heights facilities already in the IRMA data base.[1] This was possible as a computerized address matching program was now operative and allowed retrieval by Community Planning District.

This meeting was followed closely by three other work sessions in Crown Heights at which the IRMA staff both assigned coding work and collected filled-in worksheets.[2]

E. FACILITY AND COLLECTION FINDINGS

Among the collection sources the methods surveyed, IRMA II counted most heavily on IRMA I, PROBER, the liaison network and the Greater New York Fund, and for IRMA III, secondary sources and community consultation. Each of these will be looked at more closely

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1. Appendix H: Data Based; Report Samples, IRMA II.
2. Appendix E: Facilities Surveys; Collection Materials, IRMA III.

in this section in terms of collection results. Data collection, as a whole, was not a structured process; it had been done at different times by different people for different purposes on different forms. It was necessary, therefore, to sort out the various kinds of worksheets (at one point there were 18!), unduplicate them, apply criteria and somehow arrive at a unified information structure for IRMA II.

IRMA II

In addition to the primary sources described below, special questionnaires were sent out to key sources in selected specialty areas - principally day care, of which about 400 were returned, nursing homes with 400 returns, and Planned Parenthood, also 100.

IRMA I[1]

An analysis of how IRMA I was put together, what relevant information was in it and what elements were adaptable to the new version was one of the earliest tasks undertaken.

A manual IRMA set consisted of 3,000 cards on three separate rotary-type files. These cards were not individual entries necessarily, but sometimes continuations of material from previous cards. The cards contained not only information on facilities and organizations in some detail, but also information on general programs (the differences between Medicaid and Medicare); laws (the provisions for senior citizen rent-rise exemption); corporate structures (the hierarchy of the Health Department); government (function of the Board of Education); and procedures (how to set up a daycare center); glossaries (drug terms); bibliographies (references for scholarship aid), etc. Kinds of information were not marked as separate: all were classified hierarchically under the same subject headings as were the facilities and agencies.

The classification system began with one of 15 major categories and sometimes was refined down to a third or fourth level. Cross-referencing was accomplished on the table of contents card only. Otherwise a card with a multiple service record was duplicated and placed under as many relevant headings as the components of the service warranted (a Y offering athletics, temporary housing and cultural events). Likewise if the subject heading priority was not clear (Veteran, Education), it would be placed under both. Otherwise the system was completely alphabetical - from major subject heading down through card title (ASPIRA, garnishee, turn-key housing, Greenburg law, etc.). An accompanying clue word index pointed to the specific category in which that word had a context (child abuse, rats, graft, etc.).

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1. Appendix F: Directory Samples, IRMA I.

There were many serviceable features in the card system: the alphabetical scheme facilitated replacements and additions; cards were physically simple to remove, make notes on or to re-arrange; very few constraints were placed on the nature or amount of information that could be entered - one or more cards could be used for the same entry. Classification by service category without geographical breakdown forced the user to be less dependent on local resources and to become aware of resources that lay unknown or under-utilized outside the local area.

Its drawbacks were that it had only one mode of classification and retrieval (hierarchical classification) and could not deal with the problems of mass storage and updating. Neither could it be economically reproduced in sufficient volume to answer the demand. The flow of incoming materials soon outstripped the staff's ability to catalog them, much less transfer them onto cards. Updating methods on field units had included mailing replacement cards, on-site visits to make changes and telephoning updates to the field office. No one method worked consistently and all were abandoned. As for volume of sets - merely reproducing, collating and placing the cards in order in the first 50 sets (150,000 cards for the body, 50,000 for the index) took over six months.

What was adaptable for the new system from IRMA I was primarily its classification system. This precluded the necessity for creating one from scratch, allowed for ready classification of the facilities that would go forward into IRMA II and was highly susceptible to modification and rearrangement. The roster of clue words also formed the basis of the new lexicon that was subsequently developed. Lastly, of course, information on the facilities themselves made a start on some 1,000 entries for the computerized version, despite the fact that the entries were by no means standardized and much of the material uneven. Information on most of the facilities, however, included service description, fees, application requirements and eligibility.

PROBER

PROBER had been in operation almost as many years as IRMA by the time the two systems merged, and had published and distributed listings of some special services (health care training facilities, drug rehabilitation resources, etc.). The files were primarily organized by zip code and had been collected through secondary sources as well as through mailed questionnaires and block surveys. At the time PROBER and its staff joined IRMA their source files were concentrated in two areas: facilities primarily serving senior citizens, and facilities offering alcohol or drug abuse prevention/rehabilitation programs. The rest of the source files covered everything else, but had not been classified by subject.

IRMA used PROBER to add facility information where there was sufficient data to classify and verify - about 6,000 worksheet folders. Worksheets which displayed only name and address were deferred for further research.

Liaisons

There were originally 175 liaisons who returned information on approximately 2,000 government facilities, primarily by inter-governmental mail. Some of the drawbacks in the network idea were inherent, and others due to lack of planning on IRMA's part. Among the former were: lateness in returning forms, uneven information, staff turnover, and relegation of responsibility to others unfamiliar with the routine, as well as respondents that varied from clerks to commissioners. Among the latter were IRMA's failure to supply separate facility and service worksheets (liaisons had facility sheets only), IRMA's lack of definition of direct service, and IRMA's lack of emphasis on the need for information on the structure of the agency each liaison represented.

The US and State contacts were much looser. The worksheets often were not filled out but literature forwarded instead.

Greater New York Fund

About 1,000 worksheets were filled out by IRMA staff using data drawn from these files. The file on each facility was often voluminous and it was difficult to determine not only how much to read, but how much information to record. The files were not generally in the same order and the detail of information included was uneven. Skeletal information was obtained, however, on a significant portion of the voluntary sector.

Worksheets[1]

Four basic forms were used as IRMA II collection instruments:

1. Facility/Service worksheet sets
2. PROBER questionnaires
3. Facility worksheets
4. Special purpose worksheets

The facility/service set was designed for both collection and keypunching: over 50 data elements were defined and code conventions were adopted to be compatible with the computer software package.

IRMA concluded that much inaccurate and incomplete material resulted from regarding facility and service as the same informational element. Actually quite different attributes often attach to each, particularly where a facility offers multiple services. A high school, a facility run by the Board of Education, might properly list their

1. Appendix E: Facilities Surveys; Collection Materials, IRMA II.

hours as 9-5. However, in that same high school an adult consumer education class, a service might be run in the evening by the Chase Manhattan Bank.

One facility form, with all relevant referral information pertaining to that facility and a number of service forms, one for each service offered at the facility, were filled out for each facility. The service sheet was designed to allow for the isolation and description of a large number of service elements. Some of these may coincide with facility information - open year-round, serves all of Brooklyn, etc., and some may not -- service hours, or two different addresses (application made through an in-city facility for an upstate camp), etc. The set could be filled out by either IRMA or facility personnel, and was used for the Greater New York Fund collection and some others.

While IRMA is still developing concepts for worksheet collection and encoding forms -- and resolving the difference between the two, that principle of separation between facility and service attributes is constant.

The PROBER form, developed prior to amalgamation of the two systems, was essentially a sparse version of a facility worksheet. It was set up as a questionnaire to be filled out by facility personnel. It combined facility and service information, was comprised of 26 questions, two of which had to do with unmet needs.

A combined facility and service form, developed prior to standardizing on the separation concept, and deemed most convenient for the liaison network collection, was used for government collection. It was not designed for the key punching process.

Special purpose worksheets of a very simple combined facility service nature with very few questions were tailored to the specifics of selected groups of day care, nursing homes, etc. These elicited fast and succinct response when they were mailed to the facilities for completion. But they had a drawback - they were not susceptible to direct placement in the larger service context. They did not identify the program type (day care or nursing home), and thus were difficult to fit into the file structure. PROBER also had a short form -- 9 questions.

With the above set of files and miscellaneous other forms (not counting clippings and secondary sources), IRMA II had an original raw data base of over 12,000 documents, ordered in a variety of ways (Fig. 3-4). The growth of separate files (PROBER, government, Greater New York Fund, etc.) during the collection period led to inevitable duplication and necessitated the construction of a consolidated source documents file. After the unduplicating process 6,000 facilities were identified as the base for IRMA II.

FIGURE 3-4

ORIGINAL IRMA II SOURCE FILES

File Name	Collection Form	Number Of Facilities
NYC Agencies	Facility	2,000
State/Federal Agencies	Facility	250
Board of Education	Facility/ Service	150
Planned Parenthood	Facility/ Service	100
Envir. Protection	Facility/ Service	50
Mental Health	Facility/ Service	100
PROBER - Voluntary (not drug/alcohol)	PROBER	1,000
Greater New York Fund	Facility/ Service	1,000
Daycare	Facility	400
Nursing Homes	Facility	400
Drugs/Alcohol	Facility/ Service PROBER	800
IRMA I source	Facility	1,000
Private Hospitals	Facility/ Service	100
TOTAL		7,750
Other PROBER	PROBER	4,000
Clippings	Not Applicable	Not Applicable
Directories	Not Applicable	Not Applicable

Crown Heights

The recent experiment to invite neighborhood residents to participate in facility selection produced some revelations. Since it is the only such experiment IRMA made, there is no way of knowing whether the situation was common or atypical.

What IRMA foresaw as a potential expansion or changing of criteria standards and a significant collection effort based on paths charted by community agency representatives turned out to be a simple verification and update.

A random list of new types of agencies suggested for inclusion - churches, block associations, business concerns, etc. - was submitted to the group by IRMA and was accepted uncritically. All were deemed worthy of inclusion for various reasons (not all having to do with I & R. Some related to community action, mailing lists, advisory councils and the like.) No categories were added or deleted, but neither were lists produced identifying any facilities within the new categories with the exception of block associations. Some did not respond to the suggestions at all.

No one responded regarding useful agencies outside of Crown Heights to be contained in their directory, nor on the matter of what they considered the boundaries of the Crown Heights neighborhood to be. Very few local social service facilities were added that had not already been identified by IRMA.

IRMA formulated some findings and drew some preliminary conclusions from this experience:

1. The community, though expressly interested in service information did not formulate a concrete idea of what information was necessary or in what form they wished to see it. All these people, it must be remembered, are articulate and active leaders in their community very much committed to the idea of information and referral.
2. To get information, you give it - an old tenet of IRMA's. If IRMA had entered the community and requested only that the participants identify local agencies (without the use of the IRMA proof), scarcely half would have been identified. Conversely, IRMA's impact on Crown Heights may lie, even prior to directory publication, in introducing the community participants to facilities of which they had previously been unaware.

3. One of the findings IRMA hoped to come up with was a sense of that community's special characteristics as it affected local information. There were two findings here - 1) representatives of a predominately Jewish sector within Crown Heights indicated that its constituency was well aware of its services, and very little purpose would be served by listing the full extent of its services in a local directory; 2) an interesting argument developed over the confidentiality and general use of block association lists, one of the cornerstones of community improvement and organizing. The final decision was to omit them.

4. From a qualitative point of view, one facility, a nursing home, was deleted by the group on the basis of poor service; and they agreed that Off-Track Betting was not an appropriate listing. These results led IRMA to reconfirm that its original policy of acting as an objective referral resource without attempting to apply evaluative standards - seemed to be valid.

Worksheet[1]

A special worksheet was devised for the recent Crown Heights experiment. It was almost entirely an encoding sheet which would separate facility from service data. It was distributed, together with the IRMA proof, to the participants in Crown Heights who volunteered to reconcile the facility information with the IRMA proof and complete the service information (program description, eligibility, fees, area served, etc.) - all of which would be new. This represented a departure from earlier procedure in that IRMA intended to key punch service data directly from worksheets encoded by non-IRMA people, and publish the results as IRMA III.

By the terms of the cooperative project, the participants agreed to encode these worksheets in the interest of expediting the publication of a Crown Heights neighborhood directory. This would be, in effect, a means of augmenting the IRMA staff and ensuring the inclusion of kinds of service data which would extend the general service codes of IRMA II.

The experiment was quite decisive. Despite explicit verbal and written instructions, what encoding was done was very poor. Information on programs tended to be superficial (for a hospital "medical services") non-explanatory (for a poverty group "community involvement"), or missing (from a description of his own agency one of the participating agency's own staff members "Director unavailable today"). No deadlines were observed and a large portion of the

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1. Appendix E: Facilities Survey; Collection Materials, IRMA III.

information was never encoded. The majority of the worksheets returned had to be completely redone. At best, the existing facility information was verified by phone - not visits or personal knowledge as hoped, and perhaps half the requested new service information was encoded (correctly and incorrectly). The result was a massive editing task for the IRMA staff.

The conclusion was unmistakable. For any degree of competence to say nothing of consistency, completeness or even observation of time constraints, IRMA would have to do its work or train people in collection methods. Perhaps IRMA should not expect practitioners of I & R or outside agencies to become proficient in the exacting work and specialized knowledge that goes into its information collection and encoding process. Their talents and priorities lie elsewhere. In any event this experience re-enforced IRMA's contention that the two functions - information processing and the dissemination - should be separated.

IV. INFORMATION STRUCTURE

A. DESIGN OBJECTIVES

The computerized Project IRMA systems must work within the overall project goals. The project must not be constrained by the computerized systems nor should the systems become sophisticated beyond the project's ability to use them.

The experimental and developing nature of the project -- coupled with its comprehensive goals -- mandate dynamic systems development. Different phases of the project place different demands on the computer systems. Testing, research, production and so on, must all be supported to varying degrees at different times.

Modularity

The lack of previous findings on which to base systems design requires that design and implementation proceed in controlled stages. This calls for hardware to progress from small-scale mainframe with limited peripherals to large-scale mainframe with full peripherals. Volume and types of information will progress through as wide a spectrum. Access methods and project processes supported by the computerized systems are to grow as design, implementation, testing and analysis show appropriate areas for growth.

User Orientation

The computer system should be as user oriented as possible. Project staff must be able to use the computer systems without extensive training. Limited resources and design philosophy preclude a large staff of computer professionals.

Application

The computer system is an integrated part of the project's processes, not a system of and for itself. This philosophy evolved early in the design phase and led to a major change in focus -- from the use of a computer for the purpose of printing the directory only, to that of using a computer as a necessary processing tool in virtually all of the information system's activities.

The system accepts input from a wide range of devices (card reader, tape drives, terminals, etc.) and in many formats (fixed and variable field length, differing data descriptions, etc.) This input requirement is due to the wide variety of media and forms in which referral information is available. Input is more economically gathered when the original input format and media can be directly accommodated.

Automatic validation of the input data is also performed. This includes insuring that the data is input in the expected pattern, that the data contains the expected type of characters and that it contains exactly that data that is expected ("table matching"). For example: a zip code input that consists of four alphabetic characters would fail on all three counts - the expected pattern is five digits, the expected character type is numeric, and the data would not be found in a zip code table. Other input editing features include checks on minimum and maximum length and prerequisite fields.

Storage

Large volumes of data must be accommodated. The data currently stored by IRMA is 10 million characters. As full data is developed and added, this will easily exceed 100 million characters. As the demand increases, the system is to be able to handle this load through implementing previously designed modular components. While additional design will be needed (primarily in the scheduling areas) hardware and software changes will be minimal.

The future scheduling design is to center on directory production and determining the priorities under which data segments are to be available under real time access.

IRMA's data is stored almost completely in variable length and is to remain so, as the best and most feasible method of dealing with masses of data and the only rational method for such unstructured text-oriented information.

B. DATA DEFINITION

Computerized IRMA is made up of its information structure and that structure's environment - a function of the hardware and software employed to actualize the information structure. The information structure is data-base oriented. That is, IRMA has several data bases, created for different purposes at different times. The current data bases deal with primary resources (services, facilities), secondary resources (documents, books) and terms (the services vocabulary). The hardware is a nondedicated IBM 370/145 operating under VM/CMS, located two blocks from the Project offices. The software is DRS (Data Retrieval System), a proprietary data management package. Other computer languages and routines used in systems processes act as interfaces.[1]

1. Appendix G: System Environment.

The three basic information units of the IRMA system are facilities, secondary resources, and terms. They are discussed in this section: their relationship to one another, and their sub-units. There is also a service unit, which is distinguished from a facility unit only in terms of record type and information logically stored.

Data Elements[1]

Facility

The facility is a place; a physical location which is associated with one or more services and possessing a name. It may be administered by an agency other than itself. The facility is linked with its services through two codes: service field codes and facility identification number. The service field code represents service terms (Recreation, Counseling, etc.). The facility identification number is assigned to the facility unit and to all service units that describe services offered by the facility.

When a facility is not self-administered, an administering agency code is attached to the facility unit. This code consists of two parts: the administering type code and administering agency name code. The type code represents the terms NYC, NYS, US, Voluntary, or Proprietary, and the name code the agencies - Health Services Administration, Catholic Charities, etc. An agency code is established for any NYC agency administered at commissioner level. For other agency types a code is established only when three or more facilities are administered by that agency.

Facilities typically have more than one name in addition to their legal name - acronyms, nicknames, local names or abbreviations. Frequently two different facilities will have the same name. For each facility three name fields are specified: formal name - Association for the Prevention of Cruelty to Animals; AKA (Also Known As) - ASPCA; and hash name such as ASP (for control purposes only). The AKA field may contain several names for a single facility. The corporate heading as a whole is considered. If, for instance, four facilities are known by the same name (Income Maintenance Office), are administered by the same agency, (Department of Social Services), and each facility is located in a different borough, the formal name for each facility is the "Borough name" followed by the common name, (Queens Income Maintenance Office). Another frequent example is the case of an administering agency identified as a facility. In this case the formal name is "Main Office" (Main Office, Department of Social Services).

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1. Appendix H: Data Bases; data elements.

The address is an important entry, as it is used for matching against geographical tables to produce area codes that are then used in aggregating retrieved information. To date, the most useful table information consists of codes for health area and district, community planning district and census tract.

Other facility information is included such as days and hours the facility is open and the facility telephone number.

Service

Services, the activities or aid offered at the facility, are primarily an extension of the facility, as presently conceived. A service may possess all attributes of a facility (an address, telephone, season, etc.); and conversely, a facility may possess all attributes of a service. The name of the service and description (if necessary) are the most important service attributes. Other attributes that are more likely to appear on a service unit than a facility unit are eligibility, application requirements, area served, capacity, waiting list and fees.

Secondary Resource

A secondary resource is a document such as a social services directory, pamphlet, technical manual, annual report or a proposal. A document possesses a name, an origin (author, publisher), a physical description (book, print-out, size, number of volumes) and contents description.

Term

To date, information stored in a term unit is limited to the term itself (mental hospital), service code (08041), definition (rehabilitation) and scope note (use for mentally disabled, not brain-damaged). Provision has been made to store with each term, its relation to other terms (broader, narrower, related, synonym, etc.).

Data Sets

Currently, five DRS data bases, 6 major tables and miscellaneous files are maintained.

Data Bases

1. IRMA2. This is the city-wide base. It contains abstracted facility information (including service codes) only.
2. IRMA3. This is the working model of a services data base; it includes full information, codes and text, on facilities and services.

3. LEXIRMA. This base contains the "terms" of the IRMA lexicon; it is used to generate the DRS thesaurus table and the service and modifier tables.

4. RESIRMA. This base contains descriptions of literature in the IRMA library. It will become a part of IRMA3.

5. XREFIRMA. This base currently contains citations from RESIRMA to IRMA3. All the facilities in Crown Heights were identified, if they appeared in any relevant directory, and entered into the base. This provided a means of both comparing different service descriptions of the same place from different sources, and a means of identifying new ones; in other words, a data control and historical base.

Tables

1. Agency names. This table contains agency codes and translated names. The codes are entered as part of the corporate headings in IRMA2, IRMA3, and XREFIRMA data bases.

2. Service codes. This table, generated from LEXIRMA, contains service codes and their translated names. The codes are entered into LEXIRMA as one segment of a term, and are used in indexing facilities in IRMA2, in IRMA3, and the secondary resources found in RESIRMA.

3. Service modifiers. This table (also generated from LEXIRMA) contains modifier codes and their translated names. They are used in the bases named above in a similar manner as the service codes.

4. Thesaurus terms. This table contains terms that are acceptable for inclusion in an index, or can be used in the indexing process - generated from LEXIRMA.

5. Noise-words. This table contains words that are suppressed in the creation of a KWOC index.

6. Addresses. This table contains street addresses, borough, zip codes, and special area codes such as census tract, health district, etc.

C. SERVICES STRUCTURE

Service components relate in different ways and to differing degrees, and these relationships are controlled throughout the system through code and term linkages. In IRMA3 the services data is contained in the service context fields (the facility corporate heading and overview and the service name and description); and the service code fields on the facility record. In LEXIRMA this data is contained in the term and descriptor code fields.

Many more relations are apparent (such as the other IRMA3 text fields) and others are implemented (such as service codes in RESIRMA), but have not been analyzed to date.

Text

IRMA's first services index has just been generated - a KWOC (key-word-out-of-context) index using carefully selected keywords from the text fields which describe services. The keywords that appear in the index are words or phrases that occur in the computer "thesaurus" and also in the descriptive text. They must match to pass as a valid index word or phrase.

The text fields scanned to produce this index are the corporate headings, the AKA names, the service name, the description fields and the facility overview field - the facility overview is entered for a facility when the facility offers many services and the corporate heading provides no information, or misinformation as to the facility's purpose. (Haitian American Independent Craftsmen Inc. is a day care center.)

The thesaurus was formed from lists of candidate terms from city-wide corporate headings, word lists gleaned from various secondary sources, and <u>all</u> input text fields. The composite list was then reduced by successively passing it against a list of noise-words. These are words that commonly occur but are not to appear in the index - words like "program," connectives, prepositions, etc. During these runs noise words are removed from the candidate list, the results are inspected and the two lists are altered accordingly.

The descriptive fields were written, to some degree, with an awareness of this eventual display in a KWOC index although the corporate heading could not be changed. This awareness was balanced with the demands of portraying the service succinctly.

Code

IRMA's lexicon is based on a small tightly controlled vocabulary. Having a small number of broadly defined terms greatly facilitates the indexing process. The small number makes them easy to remember and the breadth of scope makes them easy to assign. Specificity is provided by applying combinations of terms.

"The terms an indexer assigns to a document to describe its subject matter may conveniently be referred to as descriptors. Descriptors may be of various kinds: generic, specific, single-word or multiword. These descriptors are also used, in various combinations, to conduct searches in the system. The descriptors are the working terms of the vocabulary: they are used by indexers and searchers and they are the terms to which document numbers, or document surrogates, are posted."[1]

IRMA's descriptors consist of a service code list. Each code defines a fairly broad class within the urban services subject area. Classes with finely drawn distinctions are avoided.

"....a descriptor consists of two parts: a label and a verbal or written definition. In creating a controlled vocabulary, we isolate concepts that are likely to be useful for retrieval purposes and give each concept a separate label."[2]

For IRMA's purposes service descriptors are now two specific classes of terms that are represented by codes of "labels." The service descriptor code classes that now exist in IRMA's vocabulary were separated to allow each to play a different role as terms. The first is the service subject (the area of service, e.g., Health, Day Care, Employment, etc.); the second is a modifier code that is attached to the subject code and defines two unique attributes of that service: its target population (handicapped, veteran, etc.) and its mode of delivering that service (counseling, technical assistance, etc.).

The service subject code is structured hierarchically to three levels within 14 categories.

Example: Level 1 - Consumer Affairs
Level 2 - Home Management
Level 3 - Home Economics

1. Lancaster, F.W. Vocabulary Control for Information Retrieval. Information Resources Press, Washington, D.C., 1972, p. 115.
2. Ibid., p. 117.
3. Appendix E: Facilities Survey; Services Coding (IRMA II), Definitions.

The modifier code schedule currently contains 48 descriptor terms for target population (further grouped into clusters) and 21 delivery mode codes (also grouped into clusters). A third modifier code is an exception code. It is used as a control device to except certain services for reasons such as insufficient data.

There is presently an approximate 5% overlap of descriptor labels in both subject and modifier classes. As an example: information and referral is a subject category when it is the primary service of a facility. It is also a mode of delivery, and can be attached as a modifier code to the subject code "Employment" (or any other subject code). This overlap percentage will probably increase.

Descriptors then - the working terms of the vocabulary - are made up of two elements.

1. The label - a numerical or lettered code.
2. The definition - a written description of that label - a term and a scope note[1] - IRMA's specific use of that definition.

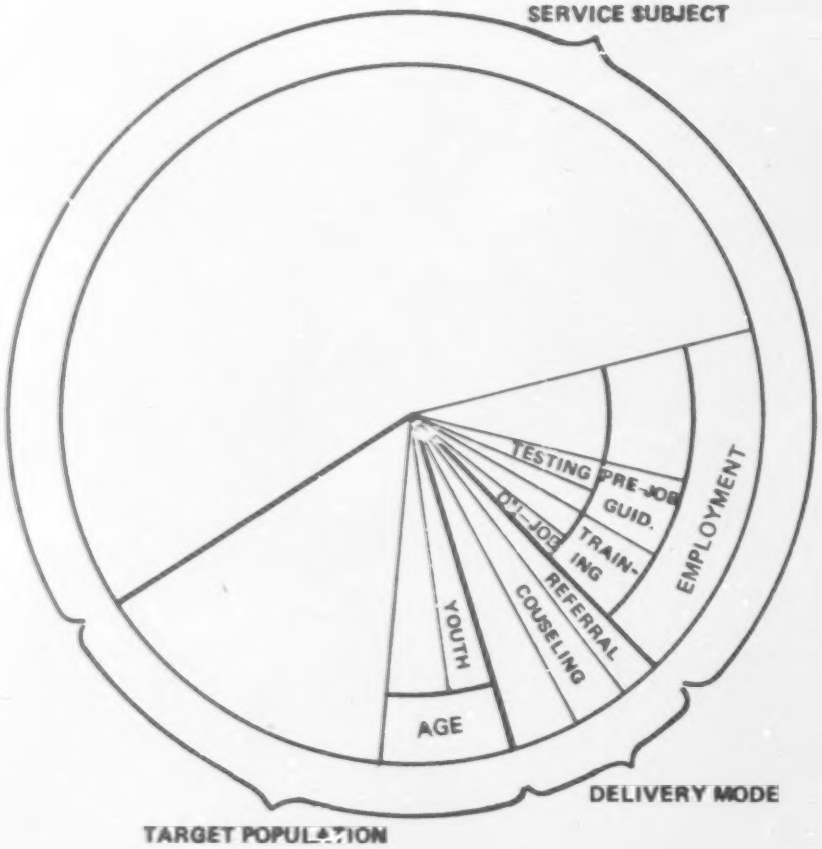
IRMA steadily increases in number of descriptors. IRMA II had 115 - IRMA III, 250. Future IRMAs may have up to 500 but no more.

Labels can be used in combination with each other or, in some cases alone, to uniquely describe an object (book, service, facility, etc.) the result is the formation of an entry term (Fig. 4-1).

	Subject Code	Modifier(s) Code	Definition
1.		A	Drug Addicted
2.		C1	Direct Service
3.		C2	Information
4.		D1	Residential
5.		D2	Outpatient
6.	100		Health
7.	110		Rehabilitation Treatment

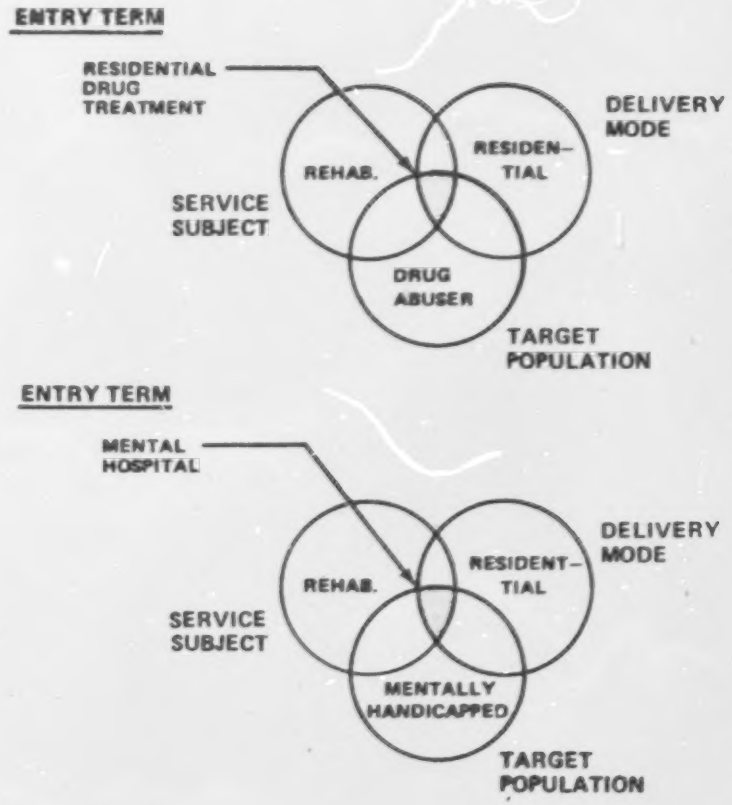
1. Ibid, p. 178: "...it is the definition (i.e, Scope) of a class that governs retrieval performance rather than what we call the class (i.e. label it.)" These quotes are primarily Lancaster's description of Calvin N. Mooers' Zator System from Articles in Information Retrieval Today, 1963 and Punched Cards: Their Application to Science and Industry, 1958.

SERVICE TERMS



1. DESCRIPTION CODE TERMS

THE MEANS USED TO INDEX AND STORE DATA.



2. ENTRY TERMS

A COMBINATION OF DESCRIPTOR CODE TERMS TO DEFINE A SPECIFIC OBJECT – SERVICE OR FACILITY. THEY ARE USED FOR GROUPING FACILITIES AND AS THE BASIS FOR DIRECTORY INDEXES

Two combinations of these codes define the following entry terms:

1. 110 A/C1/D1 = Halfway house for drug addicted
2. 100 A/C2/D2 = Information on clinic services for the drug addicted.

D. SERVICES INDEXING

Service code indexing is the act of applying descriptor codes to the object to be indexed. It is one of the most crucial, and expensive, input processes in the IRMA system. This has led to development work on several indexing processes. Each is fitted to a specific processing need and each is compatible with the others in that they all rely on the common base vocabulary. The most involved process is that of indexing facilities -- the least that of indexing secondary resources.

LEXIRMA

Terms and their definitions are the initial records stored in this base. LEXIRMA records have been generated in two ways. The descriptor codes, terms and definitions were entered from the original IRMA2 subject and modifier tables and subsequently updated. When IRMA3 entries were indexed by using combinations of descriptor codes that did not previously exist in LEXIRMA, a new LEXIRMA entry was made containing the new entry term and descriptor code. Two other kinds of entries are currently being added: entries for a thesaurus table used in generating automatic indexes from text descriptions; and synonyms.

RESIRMA

Each resource is indexed, using a condensed list drawn from the full descriptor schedule. This short schedule contains the major subject codes and selected modifiers.

IRMA3[1]

IRMA3 is the facilities and services data base. At present, only facility records are indexed. Indexing for IRMA2 is much the same.

Each record in the IRMA3 data base may contain descriptors in up to 30 service fields. When a facility is indexed, the combination of descriptors in one service index field must contain one and

1. Appendix E: Facilities Survey; Services Coding (IRMA II), Materials, Procedure

only one subject descriptor code. Example: Morrisania Child Health Center (facility) - Medical Services (subject code) direct service (delivery mode) - child (target).

Facilities indexing is aided by reports from the LEXIRMA data base. The indexer may check the terms and concepts (by descriptor) contained in the source information against the LEXIRMA descriptor code combination and, if it is found, apply the same term. If the code combination that fits the new facility does not exist, a new combination is applied. The resulting combination and term are entered in the descriptor field and serve as a new record for LEXIRMA.

There are two other kinds of terms now appended to the descriptor field. These term appendages will be dropped progressively as LEXIRMA satisfies a growing percentage of indexer searches. The terms are:

1. Synonyms
2. Terms that are narrower than allowed in the coding structure. Example: A certain combination of subject code and modifiers indicates "youth group." The term wanted is "gangs." "Gangs" is appended as a sub-definition of "youth group" and both would appear.

V. INFORMATION SYSTEM

The IRMA computer system uses several programming languages. The base language is DRS (Data Retrieval System). This language is augmented by the standard IBM OS (Operating System) languages and CMS (Conversational Monitor System). These components comprise, in combination, the IRMA system.[1]

DRS, a proprietary software product of ARAP, Inc., is a general pupose data management and retrieval system designed to handle a large variety of data. At present DRS is available on the following computers and operating systems.

8K IBM 1130

16K IBM 1130

General Automation GA 18/30

Digital Scientific 16K META4

32K META4

IBM 360, Model 40 and up, OS

IBM 370, Model 135 and up, OS/VS

IBM 370, Model 145 and up/CMS

A. "STANDARD" FEATURES

Present IRMA systems software provides the following features, the assemblage of which is not now available on any other retrieval system -- many individual features are found only rarely in other retrieval systems:

1. Capability to operate interactively or in a batch mode -- including the ability to interrupt a command and then enter another. It also has a number of features, among them check-batch operation, to facilitate batch processing.

2. Input/output device selection dynamically altered. For example, the system reports the number of errors detected during an add or modify operation. The operator may then decide whether to see them on his terminal or have them printed on a high speed printer.

1. Appendix G: Systems Environment; CMS, DRS

3. Accommodation of variable length textual, numeric or calendar data, e.g., facility name and address, facility zip code, number of services, publication date, verification date, etc.

4. Ability to store all data text to enable reproduction on output of the exact input received, even for numeric and date type data, e.g., each service field has a service code, service modifiers, and free text.

5. Modification, addition, and deletion on a field or record basis where the size of any field and/or record can be dynamically increased or decreased.

6. Production of key-word-out-of-context (KWOC) indexes, i.e., extracting each word or phrase of a field or fields and indexing separately by each such word.

7. Ability to "pass data over" a noise-word index to enable cleaning of data as well as use of a thesaurus. This feature is used in the generation of KWOC indexes in which only selected key phrases are indexed and others in which only selected terms are omitted.

8. A wide variety of output formats are provided -- from side by side 3" x 5" card to a columnar listing (in which any and/or all columns may contain multiple lines for each record) to a format in which each field of data starts a new line (with caption) and may occupy multiple lines. All types of formats are extensively used (the card format, in particular, to automatically generate post cards for information verification).

9. Linkage out to user-written special purpose modules which operate on a selected subset of the data -- perhaps in some sort sequence that either produces its own report or modifies that data bank -- and returns to DRS.

IRMA has heavily and significantly utilized all the above features to enable the generation of a variety of associated data bases for the production of various special purpose reports, microfiche, etc., from these data bases. Since the original data gathered by IRMA was very "rough," the capabilities of DRS to examine data in various ways, to produce listings of unique occurrences of each field, etc., proved invaluable in the cleaning of the data. The system has sophisticated methods by which data can be checked on input for consistency, for requisite patterns, or for specific values. The gathering and cleaning of the data is one of the most difficult of the tasks involved in producing directories.

B. LINK MODULES

One of the unique features of DRS is the LINK command which enables the writing of special-purpose modules to perform specific tasks related to a data bank and then return to DRS. This feature is readily extensible to nearly any information management problem. At present more than 20 general-purpose modules have been written. Most are of a utility nature enabling the manipulation of data in various non-standard ways. Those modules which have been of particular use in the IRMA system are explained briefly.

LMPTR - This LINK module permits the "outputting" of selected fields of a data base (along with the ability to change field names), so that some portion of the data in one data base can be transferred to another data base.

LMFFC - A LINK module that permits the user to output records from a data bank where the information is transferred to specific columns of one or several card images. This particular module enables IRMA to transfer portions of the facility data to a magnetic file which can be used as input to COBOL, FORTRAN and other standard language programs. This feature has been used to generate files that serve as input to City Planning packages such as SAMS (Street Address Matching System) which generates an address codes file.

LMEDF - a LINK module that enables easy corrections to a portion of a field or mass corrections across an entire data base or a selected subset. Particularly in the case of a data base in which fields are of variable and sometimes great length, correction of such information is exceptionally difficult if the entire field must be re-entered to effect any correction. This module, on the other hand, permits the alteration of a portion of a field, thus simplifying the correction process. In addition, this module permits changing, based upon some selection criteria, the contents of a field in a large number of records by means of a single input card.

PIUTL - This LINK module was written specifically for IRMA to perform a number of corrective and utility actions. In particular it computes the number of existent services for a specific facility, fills out the facility ID and the agency code with leading zeros, and appends a type code to the agency code.

PIPNS - Another LINK module specifically written for IRMA that this serves essentially as an initialization module for service selection. In particular this module loads from an input data set a series of tables, comprising a list of service field names with specification of allowable service modifiers and the assorted cluster

group to which that modifier belongs. This module also initializes service selection and permits the specification of a maximum number of facilities allowed to be selected, number of total services, etc. This provides protection against selecting the entire data bank or a large part thereof.

C. SERVICES SELECTION

IRMA has specific needs and requirements for selecting sets of data for printing. Because DRS does not currently have a hierarchical data storage and retrieval facility (although development is currently underway), the following system was adopted as the fastest method of selecting a facility based upon the contents of one or more services. Two modules were provided, one to generate an inverted file containing compacted information from each of the service fields in each record permitted to be a candidate for selection and one to retrieve the selected records by using this inverted index. The information from each service is coded in a form suited for high speed retrieval (for example, the service modifier information reduced from a one or two character designation to a single bit). Thus the approach taken requires the following two LINK modules:

PIGSF - This module generates the inverted file used by PISEL (below) and, because highest possible speed is desired during retrieval, this module must be invoked whenever any record is added, deleted or modified.

PISAL - This module accepts as its parameters general logical expressions involving the two fields -- SC (service code) and SM (service modifier). The operations permitted are:

1. SC equal some desired service code(s) (e.g., SC = (030711, 962173)).
2. SM contain one or more of a requested set of modifier(s) (e.g., SM @ 'A1/B3/C2').
3. SM contain all of a requested set of modifiers (e.g., SM ¢ 'AL/B3/C5').

In addition, a service modifier cluster group can be specified in place of a service modifier. In this case, depending upon the operation requested, one or more members of the cluster must be present for satisfaction of the selection criteria.

In order to enable complex selections involving the "intersection" of two sets of selection criteria, each logical expression appearing as a parameter to this module functions "independently" of any other logical expression. When all services have been examined for a specific facility, the facility is selected if, and only if, all logical expressions have been found to be true for at least one service in the facility. Thus, a selection criterion can pose the requirement

that a facility be selected if, and only if, some service satisfies one group of selection criteria and some other service satisfies some other selection criteria.

Another special case, namely the selection of a facility if any of the services satisfies a specified set of selection criteria and no service satisfies some other set of selection criteria, requires that the 'not' operator be treated in a somewhat special fashion. Namely, if a 'not' operator appears as the first operator in a logical expression parameter, then, if that parameter should prove to be false for any service in a facility, the facility is not selected, regardless of the true value of other parameters. For example, ¬SC = 371625 appearing as a parameter would prevent a facility from being selected if any of its service had a service code of 371625.

D. FORMATTING

LMOT - This link module was written initially to satisfy IRMA's format requirements. It was purposely written in a generalized fashion since some other systems as complex have similar requirements. LMOT now adds to the DRS generalized basic format capabilities the following facilities:

1. Use of logical tests, etc., to control output
2. Use of additional files such as translate files, input files, output files, etc.
3. Generalized output block facility
4. Extensibility

LMOT provides, more specifically, the following facilities, many of which are unique to such a system or are available only by writing special-purpose programs.

1. Generalized block facility, where output continues asynchronously in each block independent of other blocks in which output may also be concurrently in process of generation.
2. The ability to generate a physical page on which multiple logical pages appear side by side, reducing output significantly for certain types of reports.
3. The ability to generate an output file of page numbers and microfiche locators. This feature is used to prepare directory indexes.
4. The ability to sort any output file based upon a text field in such a file, required to provide high speed operation during the generation of an index - see 3.

5. The ability to look up and locate in an output file all records containing a specified text field contents.

6. Ability to locate and read some other data base record based upon the contents of the current data base record thus enabling the generation of a hierarchy based upon field contents rather than structural relationships.

7. Ability to accommodate a number of translate tables that will translate the contents-specified text strings. IRMA utilizes this facility to translate service codes and modifiers to meaningful text statements.

8. Ability to test and "break apart" contents of a field into separate components.

9. Automatic handling of page overflow by providing new page headings, etc., when output from a record exceeds the current page, arithmetic and do-loop capability to permit simple counting functions, etc.

10. Complete logical test capability which permits execution of a "statement" or "group" of commands based upon a general logical expression, possibly involving contents of a data field.

The above only represents a limited subset of the capabilities of LMOT. LMOT currently handles more than 50 different "operators," and operators are easily added. LMOT represents a major step forward in the direction of truly user-oriented output from data bases. In fact, when IRMA reaches the stage of photocomposition, it could utilize the full upper-lower case capability which LMOT already possesses. LMOT at present is, by itself, approximately 25% the size of all of DRS which is, by itself, an enormous system comprising more than 30 modules and totaling more than 25,000 lines of FORTRAN source code and 8,000 lines of assembler code.

E. REPORTS

Systems flexibility precludes describing every output individually. The basic systems output is a report -- anything from a simple terminal display generated in response to a user request for one specific data element from one specific data base, through simple mailing lists, through directories involving many data sets. These reports are generated on magnetic tape, disk and punched cards as well as onto paper and microfiche.

Reports are generated for in-house use in operations such as duplicate checking and proof reading, as well as for obvious public uses such as directories and intermediate reports for verification.

Reports are generated by many of the software languages available to the project, the primary one being DRS. A minor exception is in the areas of table building and input editing prior to DRS maintenance runs.

Maintenance Outputs

The reports regularly generated as part of the maintenance processes are:

1. Input listing - a list of the add, modify and delete records to affect any data base as they exist on a disk file. The list is scanned for major errors which are corrected via terminal. This report is infrequent and generated only when there is reason to believe major errors exist.

2. Error listing 1 - an analysis of the data and commands to DRS used in making adds, deletes and changes. It is generated prior to actually making any changes to a data base. The errors are fixed as in 1.

3. Error listing 2 - an analysis of the result of making adds, deletes and changes to a data base.

4. Proof list - a full printing of all data in the data base. This report is always maintained up-to-date, in full, by record identification number.

5. List of records changed or added - in proof list format. Seldom generated.

Access and Retrieval Outputs

These reports essentially cross reference the data elements. Data elements and sub-elements are arranged and displayed as desired. The access reports most frequently generated are:

1. Facility identification

   These reports are alphabetically arranged by the facility name fields: facility primary name, facility AKA names, and administrating agency name. Other information usually displayed is - address, identification number and telephone.

2. Services identification - term

   An alphabetically arranged list of the terms appearing in LEXIRMA - the descriptor code or codes associated with the term, the definition of the term, and the facilities, if any, to which the term is assigned.

3. Service identification - code

   As above, but arranged by descriptor codes.

4. Resources

   By author, resource name, subject, and by publisher.

Directories

A "directory" as contrasted to a "report," consists of a body and one or more indexes.

Body

Two directories are generated -- alphabetical and subject section. The alphabetical directory displays all facility and service information under the facility corporate heading. "See" references are made from the AKA names and the administering agency name. Subject sections are formed by selecting certain combinations of descriptor codes for each section. In IRMA II each subject section was organized by borough and zip, in IRMA III by corporate heading. No name cross referencing is provided in the body of the subject directory.

As each of these directories is produced, a page number file is also produced.

Indexes

Three indexes are produced for IRMA III's subject section directory and two for the alphabetical directory. The subject section indexes are by name, by descriptor term and by KWOC. The alphabetical indexes are by descriptor term and KWOC. These indexes are generated by sorting the data base as required and passing it and the page number file through the index generation program.